United States Department of the Interior

NATIONAL PARK SERVICE
INTERIOR REGIONS 6, 7 & 8
12795 W. Alameda Parkway
Lakewood, CO 80228

IN REPLY REFER TO:
A7221 (IMR) FOIA 20-00681

August 12, 2020
Electronic Transmission – No Hard Copy to Follow

Mike Koshmrl
Environmental@jhnewsandguide.com

Dear Mr. Koshmrl:

Reference: Grand Teton National Park (GRTE)

Subject: Freedom of Information Act Request NPS-2020-00681

This letter is our final response to your Freedom of Information Act (FOIA) request dated March 20, 2020, in which you requested:

-Documents related to removal of mountain goats at Grand Teton National Park

Your request is granted in part. I am attaching 3 documents, totaling 3,278 pages of responsive records. Also, for your information, this material is responsive to 3 other requests and thus has been posted on the NPS FOIA Website here: https://www.nps.gov/aboutus/foia/foia-frd.htm.

Portions of 508 pages have been withheld under Exemptions (b) 5 and (b) 6.

Exemption 5 allows an agency to withhold "inter-agency or intra-agency memorandums or letters which would not be available by law to a party... in litigation with the agency." 5 U.S.C. § 552(b)(5). Exemption 5 therefore incorporates the privileges that protect materials from discovery in litigation, including the deliberative process, attorney work-product, attorney-client, and commercial information privileges. We are withholding 5 pages under Exemption 5 because they qualify to be withheld under the following privileges:

Deliberative Process Privilege

The deliberative process privilege protects the decision-making process of government agencies and encourages the frank exchange of ideas on legal or policy matters by ensuring agencies are not forced to operate in a fish-bowl. A number of policy purposes have been attributed to the deliberative process privilege. Among the most important are to: (1) assure that subordinates will feel free to provide the decisionmaker with their uninhibited opinions and recommendations; (2) protect against premature disclosure of proposed policies; and (3) protect against confusing the issues and misleading the public.

The deliberative process privilege protects materials that are both predecisional and deliberative. The privilege covers records that reflect the give-and-take of the consultative process" and may include "recommendations, draft documents, proposals, suggestions, and other subjective documents which reflect the personal opinions of the writer rather than the policy of the agency.

The materials that have been withheld under the deliberative process privilege of Exemption 5 are both predecisional and deliberative. They do not contain or represent formal or informal agency policies or decisions. They are the result of frank and open discussions among employees of the Department of the Interior. Their contents have been held confidential by all parties and public dissemination of this information would have a chilling effect on the agency's deliberative processes.

The deliberative process privilege does not apply to records created 25 years or more before the date on which the records were requested.

Attorney-Client Privilege

The attorney-client privilege protects confidential communications between an attorney and his client relating to a legal matter for which the client has sought professional advice and is not limited to the context of litigation. Moreover, although it fundamentally applies to confidential facts divulged by a client to his/her attorney, this privilege also encompasses any opinions given by an attorney to his/her client based upon, and thus reflecting, those facts, as well as communications between attorneys that reflect confidential client-supplied information.

The information that has been withheld under the attorney-client privilege of Exemption 5 constitutes confidential communications between agency attorneys and agency clients, related to legal matters for which the client sought professional legal assistance and services. It also encompasses opinions given by attorneys to their clients based on client-supplied facts. Additionally, the National Park Service employees who communicated with the attorneys regarding this information were clients of the attorneys at the time the information was generated and the attorneys were acting in their capacities as lawyers at the time they communicated legal advice. Finally, the [Bureau] has held this information confidential and has not waived the attorney-client privilege.

Exemption 6 allows an agency to withhold "personnel and medical files and similar files the disclosure of which would constitute a clearly unwarranted invasion of personal privacy." 5U.S.C. § 552(b)(6). We are withholding 81 pages under Exemption 6.

The phrase "similar files" covers any agency records containing information about a particular individual that can be identified as applying to that individual. To determine whether releasing records containing information about a particular individual would constitute a clearly unwarranted invasion of personal privacy, we are required to balance the privacy interest that would be affected by disclosure against any public interest in the information.

Under the FOIA, the only relevant public interest to consider under the exemption is the extent to which the information sought would shed light on an agency's performance of its statutory duties or otherwise let citizens 'know what their government is up to." The burden is on the requester to establish that disclosure would serve the public interest. When the privacy interest at stake

and the public interest in disclosure have been determined, the two competing interests must be weighed against one another to determine which is the greater result of disclosure: the harm to personal privacy or the benefit to the public. The purposes for which the request for information is made do not impact this balancing test, as a release of information requested under the FOIA constitutes a release to the general public.

The information that has been withheld under Exemption 6 consists of personal information such as personal email and physical addresses and phone numbers and we have determined that the individuals to whom this information pertains have a substantial privacy interest in withholding it. Additionally, you have not provided information that explains a relevant public interest under the FOIA in the disclosure of this personal information and we have determined that the disclosure of this information would shed little or no light on the performance of the agency's statutory duties. Because the harm to personal privacy is greater than whatever public interest may be served by disclosure, release of the information would constitute a clearly unwarranted invasion of the privacy of these individuals and we are withholding it under Exemption 6.

We do not bill requesters for FOIA processing fees when their fees are less than $50.00, because the cost of collection would be greater than the fee collected. *See 43 C.F.R. § 2.37(g)*. Therefore, there is no billable fee for the processing of this request.

Alison Yamato, National Park Service, Regional FOIA Coordinator for DOI regions 6,7, &8. Tyson Powell, Attorney, Office of the Solicitor, was consulted.

You may appeal this response to the Department's FOIA/Privacy Act Appeals Officer. If you choose to appeal, the FOIA/Privacy Act Appeals Officer must receive your FOIA appeal no later than 90 workdays from the date of this letter. Appeals arriving or delivered after 5 p.m. Eastern Time, Monday through Friday, will be deemed received on the next workday.

Your appeal must be made in writing. You may submit your appeal and accompanying materials to the FOIA/Privacy Act Appeals Officer by mail, courier service, fax, or email. All communications concerning your appeal should be clearly marked with the words: "FREEDOM OF INFORMATION APPEAL." You must include an explanation of why you believe the NPS' response is in error. You must also include with your appeal copies of all correspondence between you and the NPS concerning your FOIA request, including your original FOIA request and NPS' response. Failure to include with your appeal all correspondence between you and the NPS will result in the Department's rejection of your appeal, unless the FOIA/Privacy Act Appeals Officer determines (in the FOIA/Privacy Act Appeals Officer's sole discretion) that good cause exists to accept the defective appeal.

Please include your name and daytime telephone number (or the name and telephone number of an appropriate contact), email address and fax number (if available) in case the FOIA/Privacy Act Appeals Officer needs additional information or clarification of your appeal.

DOI FOIA/Privacy Act Appeals Office Contact Information:

Department of the Interior
Office of the Solicitor
1849 C Street, N.W.
MS-6556 MIB

Washington, DC 20240
Attn: FOIA/Privacy Act Appeals Office
Telephone: (202) 208-5339
Fax: (202) 208-6677
Email: FOIA.Appeals@sol.doi.gov

Because the National Park Service creates and maintains law enforcement records, we are required by the Department of Justice to provide the following information, even though it may or may not apply to your specific request. Congress excluded three discrete categories of law enforcement and national security records from the requirements of the FOIA. See 5 U.S.C. 552(c) (2006 & Supp. IV 2010). This response is limited to those records that are subject to the requirements of the FOIA. This is a standard notification that we are required to give all our requesters and should not be taken as an indication that excluded records do, or do not exist.

The 2007 FOIA amendments created the Office of Government Information Services (OGIS) to offer mediation services to resolve disputes between FOIA requesters and Federal agencies as a non-exclusive alternative to litigation. Using OGIS services does not affect your right to pursue litigation. You may contact OGIS in any of the following ways:

Office of Government Information Services
National Archives and Records Administration
8601 Adelphi Road - OGIS
College Park, MD 20740-6001
E-mail: ogis@nara.gov
Web: https://ogis.archives.gov
Telephone: 202-741-5770
Fax: 202-741-5769
Toll-free: 1-877-684-6448

Please note that using OGIS services does not affect the timing of filing an appeal with the Department's FOIA & Privacy Act Appeals Officer.

You also may agree to an alternative time period for processing by communicating with us, our FOIA Requester Center, or the FOIA Public Liaison. Contact information for the Department's FOIA Public Liaison, who you may also seek dispute resolution services from, is available at https://www.doi.gov/foia/foiacenters.

Should you have any further questions regarding this request, please feel free to contact me. I can be reached at the address above, by telephone at 303.969.2242 or by e-mail at Alison_Yamato@nps.gov.

Sincerely,

/s/

Alison Yamato
NPS FOIA Officer for DOI Regions 6,7 & 8

Re_ Mountain Goat Management Plan_EA Public Rev....pdf

From:	Dewey, Sarah
To:	Consolo-Murphy, Susan (Sue)
Cc:	Noon, Daniel; David Gustine
Subject:	Re: Mountain Goat Management Plan/EA Public Review PEPC Correspondences and Meeting Availability
Date:	Thursday, February 21, 2019 3:29:00 PM
Attachments:	Mtn Goat Comments.xlsx

I have reviewed all the comments and took a quick stab at summarizing/categorization. This is just a start and we will likely want to expand on this. Also, the spreadsheet is currently incomplete as I need to finish the long letters (highlighted in red).

Sarah

On Wed, Feb 20, 2019 at 4:38 PM Consolo-Murphy, Susan (Sue) <sue_consolo-murphy@nps.gov> wrote:

> Got it.
>
> Sue Consolo-Murphy
> Chief, Science & Resource Management
> Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
> P.O. Drawer 170
> Moose, WY 83012
> (307) 739-3481 (w)
> (307) 690-8005 (cell)
> Sue_Consolo-murphy@nps.gov
>
> On Wed, Feb 20, 2019 at 4:37 PM Noon, Daniel <daniel_noon@nps.gov> wrote:
>
> > Hi Sue,
> >
> > You do not need to attend the meeting. I hope that it will not take up to two hours. However, I would like to set aside this amount of time in case it's needed. If everyone prepares by reading the correspondences we should be able to easily categorize the types of comments received and come up with a strategy as you suggested.
> >
> > Daniel Noon
> > Chief of Planning and Environmental Compliance
> > Grand Teton National Park
> > John D. Rockefeller, Jr. Memorial Parkway
> > (307) 739-3465
> > Email: daniel_noon@nps.gov
> >
> > On Wed, Feb 20, 2019 at 3:42 PM Consolo-Murphy, Susan (Sue) <sue_consolo-murphy@nps.gov> wrote:
> >
> > > Hi Daniel,
> > >
> > > Please clarify whether you'd like me to attend this meeting. Also, I skimmed through nearly all the correspondences and it appears to me that they fall in several broad categories, few of which are substantive, so

wonder if it really requires 2 hours, as opposed to talking about a strategy to respond if required to those who ask for a response, and determining whether or how to consider added analysis or action (e.g., use of skilled volunteers.)

At any rate, I'm glad to see this moving along.

Sue Consolo-Murphy
Chief, Science & Resource Management
Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
P.O. Drawer 170
Moose, WY 83012
(307) 739-3481 (w)
(307) 690-8005 (cell)
Sue_Consolo-murphy@nps.gov

On Wed, Feb 20, 2019 at 10:51 AM Noon, Daniel <daniel_noon@nps.gov> wrote:

Dave and Sarah,

Attached are all of the PEPC public review correspondences received for the Mountain Goat Management Plan/EA. Please review and highlight what you think are **substantive comments** (see definition below from the NPS NEPA Handbook) or comments that we should be prepared to discuss (e.g. clarification, correction).

> ***Substantive comments*** *are those that:*
>
> - *question, with reasonable basis, the accuracy of the information in the NEPA document;*
> - *question, with reasonable basis, the adequacy of the environmental analysis;*
> - *present reasonable alternatives other than those presented in the NEPA document; or*
> - *cause changes or revisions in the proposal.*
>
> *In other words, substantive comments raise, debate, or question a point of fact or analysis. Comments that merely support or oppose a proposal or that merely agree or disagree with NPS policy are not considered substantive and do not require a formal response.*

I would like to have a meeting soon to go over the correspondences. We'll probably need around 2 full hours to discuss the correspondences. Please respond **as soon as possible** and let me know your availability over the next couple of weeks. Below is my availability:

- Monday, Feb. 25 - afternoon
- Tuesday, Feb. 26 - afternoon
- Thursday, Feb. 28 - all day
- Friday, March 1 - afternoon
- Monday, March 4 - afternoon

- Tuesday, March 5 - afternoon
- Wednesday, March 6 - afternoon
- Thursday, March 7 - morning
- Friday, March 8 - all day

Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

--
Sarah Dewey, Wildlife Biologist
Grand Teton National Park
Science and Resource Management
P.O. Box 170
Moose, WY 83012
(307) 739-3488

Mtn Goat Comments.pdf

Correspondence	LastName	Affiliation	Removal	Alt. A	Alt. B	Alt. C	Hunt	Relocate
1	Anonymous		Support					
2	Pardis		Support			X		
3	Durham		Support				X	X
4	Pribyl		Support				X	X
5	Jensen							
6	Pribyl		Support					X
7	Anonymous		Oppose					X
8	Smith		Support			X		
9	Eisenach		Support					X
10	Kummer		Support			X		
11	Harris		Support					
12	Moore		Support			X		
13	Anonymous						X	
14	Pendleton						X	
15	Baehr		Oppose	X				
16	Young		Support			X	X	X
17	Siler							X
18	Brown		Support				X	
19	Long		Support				X	
20	DeYoung						X	
21	Blevins		Support				X	
22	Muething						X	
23	Kilroy		Oppose					
24	Barandes		Oppose	X				
25	Long							X
26	Kanaskie						X	X
27	Sievert		Support				X	
28	Key		Oppose	X				
29	Vogler		Support					
30	Ridgeway		Oppose				X	X
31	Partin						X	
32	Anonymous		Support			X		
33	Poling		Oppose					
34	Romaine		Support					
35	Douglas							X
36	Boze							X
37	Anonymous						X	
38	Rumsey							X
39	Ehrler		Support					X
40	Maynard		Support					X
41	Schmid, J							

42	LaFollett	Support					
43	Johnson	Oppose					
44	Dunn	Oppose					
45	Collins	Support		X			
46	Lecourt						X
47	Brogdon						X
48	Onigkeit					X	X
49	Adams	Oppose					
50	Schaffer					X	
51	Anonymous					X	
52	Miller			X		X	
53	Murtatore	Oppose	X				
54	Carrion	Support					X
55	Reid						X
56	Anonymous	Oppose					
57	Anonymous	Oppose					
58	Goodrich	Oppose				X	
59	Jerger	Support					
60	Petersen					X	
61	Kaiser	Oppose	X				
62	McClintock					X	
63	Keller	Oppose					
64	Winn	Support			X		X
65	Harris						
66	O'Leary					X	X
67	Sanders						X
68	Thibodeau	Support					X
69	Terry	Oppose	X				
70	Anonymous	Support			X		
71	Vega	Oppose					
72	Hodge					X	
73	Furman					X	
74	Nelson	Oppose	X				
75	Miller					X	
76	Carter					X	
77	Carter					X	
78	Hoenk					X	
79	Anonymous	Support					X
80	Rumsey						X
81	Amundson	Support			X		

82	Hoenk						
83	Anonymous	Support			X		
84	O'Donnell	Support					
85	Anonymous						
86	Carlman	Support					
87	Hardman	Oppose				X	
88	St. Clair	Oppose	X				
89	Horton	Support		X			
90	Duffie	Oppose					
91	Gralund	Oppose					
92	Middleton	Support					
93	Williams						X
94	Jefferson	Support					
95	Key					X	X
96	Fagan	Support					
97	Forrest					X	X
98	Mickey	Support					
99	Pahl	Support					
100	Birdsey	Support					
101	Erickson					X	
102	Weddle					X	
103	Mincher	Oppose	X				
104	Miller	Support				X	
105	Creswell					X	
106	MacNaugton					X	
107	Sankey					X	
108	Wilkes					X	
109	Ritter					X	
110	Kunard					X	
111	Ghost of TR						X
112	Coder					X	
113	Rossi	Support			X		
114	Nations					X	X
115	Maez					X	
116	Munford					X	
117	Brown					X	

118	Wells						X	
119	Anonymous							X
120	Anonymous							
121	Schmid, M	WGF Commission						
122	Munoz		Support				X	X
123	Jones		Oppose				X	X
124	Anonymous		Support					
125	Starck						X	
126	Fox						X	
127	Anonymous		Support			X	X	
128	Robinson						X	
129	Key, P		Oppose					
130	Smith, T		Oppose					
131	Fancher							X
132	Anonymous		Support					
133	Anonymous		Oppose					
134	Kosielowsky		Oppose					X
135	Gilmer		Support			X		X
136	Altrich				X			
137	Griffin		Oppose	X				
138	Fullmer		Oppose				X	
139	Anonymous		Support			X		
140	Hoang							X
141	Franzel		Support					
142	Anonymous							X
143	Sinay		Support			X		
144	McHugh							X
145	Carlyle							
146	Stines		Oppose					
147	Wright		Oppose					
148	van schaack		Support				X	
149	Townsend		Support				X	
150	Wimberg		Oppose	X				
151	Tintera					X		
152	Ley		Support		X			
153	Blatt		Support					
154	Elliott							X
155	Anonymous		Support					
156	Hoffman			X				
157	Huslig		Support				X	
158	Sharkey		Support					
159	Russell							X

160	Schow							
161	Scott		Support					
162	Smith, S	WGF						
163	Muennich	Rocky Mtn Goat Al	Support			X		X
164	Mann		Support			X	X	X
165	Cumpton		Support			X		
166	Hilts		Oppose	X				
167	Williams, J		Support			X		
168	Anonymous		Oppose					
169	Goldeberg		Oppose					
170	Sidelinger		Support			X		X
171	Anonymous		Support			X		X
172	Suchey		Support					X
173	Thompson		Support				X	X
174	Schall							X
175	Anonymous							
176	Weller		Oppose	X				
177	Anonymous		Support					X
178	Krueger		Support			X		X
179	Saner				X			
180	Reed		Support					
181	Dunbar							
182	Small	Shoshone-Bannock Tribes						
183	Kilpatrick	WY Wild Sheep Foundation						
184	Colligan	GYC						
185	Mader	NPCA						
186	Buckley	JHMR	Support			X		
187	Maroney, R		Support			X	X	X
188	Camenzind							
189	Mellor		Support					
190	Patla							
191	Maroney						X	X
192	Anderson							
193	Maldonado							
194	Phibbs		Support		X			
195	Shook							X
196	Lennox						X	
197	Gault		Support					
198	Parks, C		Support					
199	Breitenbach		Oppose					X
200	Parks		Support					

	201	Smith,S	WGFD					
	202	Miyamoto	WY Dept. Ag					
Count				14	7	24	62	54
			Support	74			0.31	0.27
			Opposed	38				

Content

Relocation, no zoos, citizen hunters
Relocation, limited hunt to offset costs
How many mtn goats carry disease? Can carcasses transfer disease to sheep? Do pathogens remain in the environment even if carcasses are consumed? Remove carcasses to eliminate that possibility. Consider more comprehensive conservations actions for sheep.
Relocate goats to areas they can be legally hunted.
If must be removed - relocate
No zoo. Belives wolverine impacts may be understated.
Consider more comprehensive sheep conservation actions. Supports relocations but does not see need to transplant to native range.

suggests removal by WGF and hunting public on adjacent USFS lands

Hunt - Sell/auction tags to WY hunters - instead of spending will generate funds
Controlled hunt - tags sales could go to bighorn conservation
Suggests nativity claim is arbitrary and without foundation. List questions
Relocate to augment existing herds. Allow hunt similar to ERP
Relocate
Hunt - generates funds, supports community businesses, provides opportunity
Hunt - allow WGF to issue licenses
Hunt - allow hunters to remove goats
Hunt - use hunters, not paid aerial gunners
Hunt - save NPS $

Relocate

Wolves

Considers MTG native, requests scientific evidence for impacts to sheep.
More research on impacts to sheep needed
Would like to see hides/skulls used for educational purposes
Not convinced disease is a threat

Move goats to areas in need of augmentation

Believes concern for sheep but not for goats is hypocritical
Transplant sheep; lack of proof of impacts on sheep from goats

Makes Summarize numbered items
Doesn't see a problme with goats. Wolves
Suggests goal of 0 goats

Do not believe goats are exotic/non-native; other factors affecting sheep herd
Leave small goat population; hunt to control numbers. What are affects of predation on shhep on winter range?
generate revenue, provide opportunity
Use license fees for conservation of native species

contends MTG naturally migrated to area, raises concern about "non-native" wolves and impact on sheep.
Why not use birth control?
Sees no issues with non-natives. Have state donate funds to nonprofits
Hunt on NFS lands adjacent to park
No action or live removal if hunters not used
Enjoys watching goats (in Snake River canyon?). Non-native wolves….
Natural shift in species composition. Removal too costly.

Does not see a problem. Riases concer about "non-native" wolves. Waste of tax payer $.

same individual as comment 11. Get advice from ONP.
More comprehensive sheep conservation needed - how much of a factor is predation?
Raise revenue from tags.

Sheep struggling where they don't overlap goats

Views lethal removal as a contradiction to NPS mission of preservation
Other reasons for sheep decline - what is evidence that it's goats? Predations as part of the issue?
State benefit for permit sales; hunter opportunity
Can't manage wildlife
Revenue source
Issue tags to cover cost of removal

Work w/ WGF to provide hunter opportunities; wolves - manage them, may be a factor in sheep decline; Loss of low elevation winter range due to wolves.

Save magnificent goats
Would like to see addressed in shorter timeframe

Wolves driving sheep to higher elevation? Remove non-native wolves; see also comment 82 same individual?

Has seem sheep and goats togther in harmony in Tetons. Aircraft impacts on alpine ungulates. Consider fertility control for remaining goats
shortsighted to limit removal to GTNP. Re-colonization concerns.
Other impacts to sheep (backcountry receration), sheep in decline for many years, vaccine research?

Other reasons for sheep decline (2 subpops/lack of interbreeding). Nature can take care of itself. Climate change may be a factor. No proof of disease exchange.
Alt B. quickest and most efficent removal method.
Sheep are doomed anyway. Rem.oval prohibitively expensive. Recolonization concerns.
Let nature take it's course.
Removal contradictory to preservation policy. Why did goats leave old range? Let them co-exist. Non-native wolves.
Risk of disease outweighs value of goats

No zoos
Use science stats in decision making, not opinions or poetnetial backlash

Concern about disease transmission
Work with WGF to have a hunt
raise funds for conservation efforts
Believes risk of contact btwn sheep and goats is lower than with sheep and domestic sheep; suggests aquiring low elevation winter range; disputes nativity citing observation in Hornaday

Optimize public use
cost savings, provide hunter opportunity

Work with WGf to use hunters to remove goats
generate revenue for state and GTNP
Non-native wolves

generate revenue for state and GTNP and is most ethical (since hunters untilize animal)
Does not support carcases left on landscape; concern about pathogen/disease transmission from carcasses. Have hunters help remove carcasses
fix WGF deficit/split reveune with park
Let WGF manage

No hunting, science-based decision making
Work with WGF to have a limited hunt; hunter opportunity; funds for Teton sheep have come license sales and donations to sportsmens groups. Believes Type A tags will keep goats out of GTNP.
Only supports lethal removal with hunters
Prefers leaving them, but if must be removed hunt or relocate
Work with agencies to remove goat from adjacent lands. Goats in Snake River Range should be removed

Intersted in having goats transplanted into Bighorn Mtns. Would like to see hunt/skilled voluteers reconsidered - most cost effective method, less invasive than using helicopters
Consider lottery, auction, or other method to distribute tags. Support guides
Does not support government shooters; transplant to ID & CO

Believe goats are native to the area. Upset about wolves
Belives goats have not been tested for pathogens
Comments that sheep surrounded vehicle; comments about dogs off leash

Let them coexist
consider spay/neuter
Transplant to native range

Parks are not museums, wildl places (and species) are dynamic
Let goats thrive

If can't be relocated, no action
Education key to success
to start new herds

If culled, give meat to Tribes

spend $ on habitat improvement for both species

Let sheep go

Utilize carcasses for education

No zoos
Eliminate other reasons for sheep decline
use most effective and cost effective method

Do not kill goats

Willing to assit with funding and recruitment of volunteers

Let sheep and goats coexist
To paraphrase, believes our choice of alternatives is "sloth" (lazy). Proposal not in line with what NPS represents

Suggests relocation to Bighorn Mtns

Prioritize native species

herd out of park and allow more tags for hunting; utlize carcasses don't leave on landscape
augment declining populations
The letal take should be through licenses through WGF
Provided a reprint "A conceptual interference competition model for introduced mountain goats"

Lack of peer reviewed citations indicating transmission between sheep and goats

Use relations to augment other herds, issue tags to generate $

Maintain a small goat population

What is cost of each option? What is source of funding (esp. for capture of goats)? Lack of detail on transplant locations.

Opposes lethal means
Supports bighorn restoration, but not convinced goat removal is best way

References Gros Ventre herd of goats

attachments to WGF letter see correspondence
Objects to use of risk of contact model

Response

Goat removal in Snake River Range outside scope of plan

Goats not native to Bighorns

Probably refering to sheep on the NER

cite Blanchong et al.

No attachment found with comments. Emailed individual to send, if possible.

We did not use risk of contact model

talking points re_ skilled volunteers.pdf

From:	Wyse, Jennifer
To:	Raymond Sauvajot; Elaine Leslie; Jeremy Barnum
Subject:	talking points re: skilled volunteers
Date:	Wednesday, March 20, 2019 2:32:25 PM
Attachments:	Skilled volunteers talking points.docx

Hi,

Attached please find some talking points for the meeting tomorrow. I apologize for the delay. I tried to include some questions that came up in the meeting with Andrea and in the email from Jeff Crane. Thoughts/edits/comments are appreciated. Thank you!

Have a great day, Jen

****

Jennifer Wyse
202-513-7205

Skilled volunteers talking points.pdf

Talking Points Hunting and Shooting Sports Conservation Council Meeting
NPS Use of Skilled Volunteers

Thank you for the opportunity to meet with the Council about this important topic. I'm looking forward to an engaging discussion on how we can continue to work together to raise awareness within parks and assist with implementation of the full suite ungulate management tools.

I am in receipt of the October 18, 2018, letter that you sent to Secretary Zinke requesting that a policy be developed that would require the use of skilled volunteers when the National Park Service needs to manage overabundant ungulates.

The National Park Service has several tools available for directly managing both native and non-native ungulates to meet resource management objectives in parks including hunting (where authorized) or culling performed by NPS employees, contractors, skilled volunteers, and/or a combination of the above.

Tools are selected through a NEPA process based on the type of park unit, location, resource issue, conditions at the park, funding, public input, logistics, and other concerns such as safety.

One of primary distinctions between these tools and a traditional hunting program is that these actions are predicated solely on management of a park specific resource.

Because conditions on the ground may vary, it is important that Superintendents have the discretion to select the most appropriate tools for their management needs. Parks are, however, required to consider the use of skilled volunteers in their management planning. This does not guarantee that this tool will be selected, but it is considered.

The NPS has made sure parks are aware of the need to use skilled volunteers through direct communications with national level advisory groups, regional staff, and individual parks who are undertaking management actions. In addition, a detailed guidance document regarding the use of skilled volunteers is available.

In many cases, when a park selects a preferred alternative for managing ungulates, that preferred alternative includes several of the available tools to provide maximum flexibility for park managers.

For example, the recent deer management plan that was approved at Fire Island National Seashore allows the park to use NPS employees, contractors, and/or skilled volunteers. The ability to use contractors meant that the NPS was able to shoot deer in the short window that remained this year after the injunction was lifted.

Because of the mission of the NPS, we are nearly always sued when we initiate an ungulate reduction plan.

The general authority we are using for culling is the Organic Act provision in 54 U.S.C. §100752 (Destruction of animals and plant life) which provides that "the Secretary may provide for the destruction of such animals and plant life as may be detrimental to the use of any System unit."

While we also generally take the position that NPS's broader conservation mandate (54 USC 100101) alone can also authorize culling for conservation purposes, that argument is harder to make at parks that have "no killing" language in their enabling statutes (like Rocky Mountain, National Park).

In the opinion for the case at Rocky Mountain National Park, the court upheld the NPS decision to use skilled volunteers based on the efforts of the NPS to ensure that the elk reduction activity was a cull and not a hunt. The court found that:

> *The more plausible distinction between hunting and management killing is the one advanced by the NPS: namely, that the difference between permissible management killing, or culling, and impermissible hunting is that the latter is the recreational pursuit of game for meat and sport, with incidental management effects on game populations, while the former is the closely supervised killing of game to control its population.*

The NPS must be thoughtful when using skilled volunteers to ensure that the program developed is consistent with a culling activity and not hunting.

Parks contract with APHIS-Wildlife Services to conduct culling activities as the mission of WS is to provide Federal leadership in managing problems caused by wildlife.

Recently finalized ungulate management plans that include skilled volunteers as a tool include:

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Q&A

When did the NPS start using skilled volunteers?
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The Record of Decision for the elk management plan at Theodore Roosevelt National Park was approved in 2010. This plan called for the use of skilled volunteers to manage overabundant elk.

The NPS began requiring parks to consider the use of skilled volunteers for ungulate management after the programs at ROMO and THRO.

How does the NPS define hunting and culling?
In the Rocky Mountain National Park elk management plan and EIS, hunting and culling were defined as stated below. These definitions were reviewed and upheld in court.

Hunting is a recreational activity that includes the elements of fair chase and personal take of the meat, as well as being a conservation tool. Hunting is administered by the state fish and game agency, which licenses hunters. If areas of the park were to be opened to hunting those areas would need to be closed to visitor use while hunting was taking place. The NPS would need to absorb the costs of managing hunters, visitors and media during a hunt.

Culling is used as a conservation tool to reduce populations that have exceeded the carrying capacity of their habitat. As opposed to hunting, culling is done under very controlled circumstances in order to minimize impacts on park operations, visitors, private inholdings and neighbors. Culling is also an efficient and humane way to reduce herds of animals that are habituated to the presence of humans. Culling is not recreational and does not incorporate the concept of fair chase. Culling would be administered by the NPS and carried out by NPS personnel and their authorized agents, and would not require licensing by the state. The personnel doing the shooting would be responsible for killing and processing several animals in any session. Carcasses from culling operations would be tested for chronic wasting disease and to the extent possible carcasses and/or meat would be donated through an organized program to eligible recipients, including members of tribes, based on informed consent and pursuant to applicable public health guidelines. Short-term road closures (a few hours most likely early in the morning) could be needed while culling activity is ongoing.

Why did the NPS decide to not use skilled volunteers at Manassas, Monocacy, and Antietam? (Question from Susan R.)
Many places surrounding Antietam, Monocacy, and Manassas are occupied by residential development and commercial land uses, and regional highways go through all three parks. There were safety concerns related to this proximity of park boundaries to developed areas, high visitation in the parks, and topography/landscapes that inhibit clear lines of sight and complete closure of access. Based on all these factors, the NPS decided against the use of volunteers for assistance with lethal removal activities for these parks.

What new authority does the John D. Dingell, Jr. Conservation, Management, and Recreation Act give the NPS?
The new law does not give us any new authority but rather reinforces our existing authorities to use skilled volunteers to cull wildlife.

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(a) IN GENERAL.—Chapter 1049 of title 54, United States Code (as amended by section 2409(a)), is amended by adding at the end the following:

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Specific questions from Jeff Crane:

*Obviously **Grand Canyon bison** is a big issue that has caught the attention of Congress. Seems like volunteers are likely, but NPS needs to make sure that it continues beyond the initial cull.*

- The plan at GRCA will use skilled volunteers, tribal personnel, and qualified federal personnel to cull bison.

***Great Sand Dunes NP** has an ongoing ungulate management planning process underway and is considering volunteers to take care of an elk herd that is way over objective. This should be the alternative of choice.*

- The GRSA plan is currently under development.
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How many parks are open for hunting?

There are **76** NPS units that are authorized for some form of recreational public hunting or subsistence or tribal hunting.

This includes:

- **64** "*shall hunt*" units open to recreational hunting, where hunting is mandated in the park's enabling legislation; this includes Valles Caldera National Preserve and Katahdin Woods and Waters National Monument, two recently added units to the NPS.
- **4** "*may hunt*" units where hunting is authorized, but is not mandated in the park's enabling legislation. Of these, 2 are currently open to hunting and 2 are not currently open to hunting.
- **7** units in Alaska that are authorized only for subsistence hunting via the Alaska Interest Lands Conservation Act (ANILCA).
- **1** NPS unit, Badlands National Park, which allows hunting only by the Oglala Sioux Tribe on some Tribal/Park lands.

Re_ talking points re_ skilled volunteers.pdf

From:	Leslie, Elaine
To:	Wyse, Jennifer
Cc:	Raymond Sauvajot; Jeremy Barnum
Subject:	Re: talking points re: skilled volunteers
Date:	Wednesday, March 20, 2019 6:47:42 PM
Attachments:	EFL comments Skilled volunteers talking points.docx

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Thanks Jen...a few minor tweaks....let me know if you need anything else....good luck.

Elaine

On Wed, Mar 20, 2019 at 2:32 PM Wyse, Jennifer <jennifer_wyse@nps.gov> wrote:

> Hi,
>
> Attached please find some talking points for the meeting tomorrow. I apologize for the delay. I tried to include some questions that came up in the meeting with Andrea and in the email from Jeff Crane. Thoughts/edits/comments are appreciated. Thank you!
>
> Have a great day, Jen
>
> **********
>
> Jennifer Wyse
> 202-513-7205

--

Elaine F. Leslie
Chief, Biological Resources
Natural Resource Stewardship and Science
National Park Service
970 267-2135

EFL comments Skilled volunteers talking poin.pdf

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(b) (5)

[redacted]

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[redacted]

revised skilled volunteers talking points.pdf

From:	Wyse, Jennifer
To:	Jeremy Barnum; Raymond Sauvajot
Subject:	revised skilled volunteers talking points
Date:	Thursday, March 21, 2019 6:00:42 AM
Attachments:	Skilled volunteers talking points revised.docx

****

Jennifer Wyse
202-513-7205

Skilled volunteers talking points revised.pdf

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NOTE: The use of local indigenous volunteers at HAVO predates the use of skilled volunteers at ROM and THRO

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There are **76** NPS units that are authorized for some form of recreational public hunting or subsistence or tribal hunting.

This includes:

- **64** "*shall hunt"* units open to recreational hunting, where hunting is mandated in the park's enabling legislation; this includes Valles Caldera National Preserve and Katahdin Woods and Waters National Monument, two recently added units to the NPS.
- **4** "*may hunt"* units where hunting is authorized, but is not mandated in the park's enabling legislation. Of these, 2 are currently open to hunting and 2 are not currently open to hunting.
- **7** units in Alaska that are authorized only for subsistence hunting via the Alaska Interest Lands Conservation Act (ANILCA).
- **1** NPS unit, Badlands National Park, which allows hunting only by the Oglala Sioux Tribe on some Tribal/Park lands.

Re_ [EXTERNAL] Re_ Science panel notes and othe....pdf

From:	Butler, Carson
To:	Dewey, Sarah
Cc:	Michael B. Whitfield; Steve Kilpatrick; Yorgason, Nathan B -FS; Alyson Courtemanch; Wilmot, Jason L -FS
Subject:	Re: [EXTERNAL] Re: Science panel notes and other issues
Date:	Monday, March 25, 2019 12:50:13 PM
Attachments:	031219 Teton Sheep Summit PROFESSIONALS meeting notes_CJBComments.docx

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See attached for a few edits/comments

On Sun, Mar 24, 2019 at 3:24 PM Dewey, Sarah <sarah_dewey@nps.gov> wrote:

> Notes from the Teton and Whiskey Mtn BHS Professional and Public meetings. Please get me any corrections/additions to the Teton documents by 3/29 if possible. Thanks.
>
> Sarah
>
> ---------- Forwarded message ---------
> From: **Sara Domek** <sara@bighorn.org>
> Date: Wed, Mar 20, 2019 at 4:31 PM
> Subject: [EXTERNAL] Re: Science panel notes and other issues
> To: Jessica Western <jessica.western@uwyo.edu>
> Cc: Daryl Lutz <daryl.lutz@wyo.gov>, Steve Kilpatrick <skilpatrick@wyomingwildsheep.org>, Claire Barnwell <(b) (6) [redacted] @gmail.com>, Dewey, Sarah <Sarah_Dewey@nps.gov>, Alyson Courtemanch <alyson.courtemanch@wyo.gov>
>
> Hi All!
> I am attaching the 4 sections of notes I captured from the Teton and Whiskey Mountain Sheep Summit meetings last week.
> Hi Claire! I admire your assistance on helping with the summaries from these notes!...and please let me know if you need help or clarification from me. The yellow sections are highlighted because these are areas I missed or was not clear about-and in general, there are a few areas where I am sure it would also be valuable to have review from Daryl/Greg (Whiskey), Sarah Dewey/Aly (Teton) and perhaps even some follow-up clarification from the panelists. Please note as well that there is overlap from some of the Professionals and Public meeting sections both days so some notes do not repeat for both sessions (in particular the "introduction/background" sections of notes).
> Additionally, I believe Clinton Epps was intending to send along some genetic ideas for the WM herd as he was unable to come over from Jackson for that meeting so we might want to reach out to him to inquire if he had anything to add prior to the upcoming April 3 meeting.
> Please let me know if you have questions or needs.
> Best,
> Sara
>
> On Tue, Mar 19, 2019 at 11:38 AM Jessica Western <jessica.western@uwyo.edu> wrote:
>
>> All,
>>
>> Just wanted to let you know that one of my amazing graduate students Claire Barnwell is working with me on the categorizing of the results from our Bighorn sheep meetings. She will also be assisting me in Lander when we have our internal WGFD meeting on May 1. Just wanted to introduce you to her and vice versa. Claire, Sara is Executive

Director of the National Bighorn Sheep Interpretive Center and Daryl is Wildlife Management Coordinator for the WGFD Lander Region. Steve is Executive Director of the Wyoming Wild Sheep Foundation.

Sara, when you have the science panel notes, I'd love to see if those too can be categorized for use on April 3. It's a quick turnaround time for us but we'll do our best. Please send them to both Claire and I.

Thanks,

Jessica

--
Jessica M. Western, Ph.D.
Senior Research Scientist, Human Dimensions in Natural Resources
Director, Collaboration Program in Natural Resources
Ruckelshaus Institute, Haub School of Environment and Natural Resources
University of Wyoming
Laramie: 307-766 5048
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--
Sara Domek, Executive Director

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307-455-3429 * sara@bighorn.org * Like us on Facebook!

Our mission is to educate people about bighorn sheep and the conservation of wildlife and wild lands.

--
Sarah Dewey, Wildlife Biologist
Grand Teton National Park
Science and Resource Management
P.O. Box 170
Moose, WY 83012
(307) 739-3488

031219 Teton Sheep Summit PROFESSIONALS meeti.pdf

Teton Range Bighorn Sheep Working Group-Sheep Summit
Professionals Session: March 12, 2019, 8am-4pm, Jackson, WY

Welcome/introductions/goals & outcomes

Attendees:
Carson Butler-JH
Hank Edwards-WY G&F
Mary Wood-WY G&F
Peri Wolf-NDW
Scott Polo-USFS
Greg Anderson-WY G&F
Tom Stephenson-CA DFW
Clint Epps-DFW OR
Tom Bessar-WSU
Tom Lohuis-AK climate change nutritional effects
Steve Kilpatrick-WY WSF
Bob Garrott-MSU
Aly Courtemanch-WY G&F
Sarah Dewey-TNP
Jason Wilmont-USFS Biologist
Hollie Miyaski-ID DFG
Karen King-BT
Sara Domek-NBSC
Andy Pils-USFS
Don Delong-USFS BT
Michael Witfield-Teton studies in 70/80s
Tony Long-Cody wildlife biologist, Absaroka herd management
Doug McWhirter-WY G&F
Mike Rigliano-Plant ecologist-long term vegetation study
Mary Moore-Jackson District Ranger USFS
Scott Carpenter-engineering USFS

Commented [BCJ1]: TNP

Commented [BCJ2]: OSU I believe

Commented [BCJ3]: Mong

Herd History & why we are here-Working Group (Sarah Dewey & Aly Courtenmach)

- Highlight research summary sent earlier
- NPS, USFS, WY G&F all responsible for Teton Range bighorn sheep herd management with various goals and approaches for management
- *use talking points from Sarah Dewy's presentation
- Working group was formed between agencies, WY WSF
- Landscape management itself: wilderness management (USFS Caribou-Targhee on west side, NPS managed wilderness on east side)
- Stressors:
    - Loss of historic migration to low elevation winter ranges
        - Winter at high elevation where conditions are extreme and food scarce
        - Exposed to mortality sources not associated with typical low elevation winter ranges

        - Wintering areas have great importance as only remaining options
    - Small isolated population that may have undergone a recent decline
    - Expanding nonnative mountain goat population increasing risk of
        - Disease transmission
        - Competition for space and food resources, especially on winter ranges
- Snake River Range and Big Hole Range herds no longer exists (no connection)
- Gros Ventre Mountain (Jackson Herd) also likely not connected any longer
- Mt goats introduced into Snake River Range 1960/70s, genetic work indicated goats dispersed from this introduced herd
- Non-native mountain goats
    - Dispersed from an introduced herd in Idaho
    - Rapidly growing, breeding population now established
    - Dispersed transmission and competition for limited winter range are primary threats
    - NPS goat management plan currently being conducted with three options: do nothing, propose lethal removal, lethal and nonlethal removal
- Overlap with bighorn sheep and mountain goats evident through camera trap photos
- Pathogen testing
    - Both have tested positive for two of the pathogens in Teton Range
    - Adjacent Jackson bighorn herd tests positive for all the pathogens as do the goats in Snake River range-check for accuracy
- Domestic sheep grazing
    - Historically 25,000 domestic sheep were along ID side of Tetons
    - Allotments closed with WYWSF incentives along with other allotments historically closed by USFS
    - All allotments now closed (on east side of Tetons)
    - Peri: Have small hobby farms been assessed? A: Not thoroughly-not a lot, but there are some domestic goats & sheep south in Palisades. Snake River Range & Big Holes areas have domestics and official allotments.
- Loss of historical migration & winter range
    - Early settlement 1890-1920: historically bighorns came into Jackson Hole valley floor and west into Teton Valley in ID as well
    - Domestic sheep grazing
    - Fences and rapid settlement in low elevation areas
    - Overhunting in early 1900s
    - By 1950/60: last time sheep were documented migrating down to valleys
    - So for last 60-70 years, these sheep have been nonmigratory-spending time up high all year long (9-11,000 feet wintering, 10,000 ft. average in wintertime)
    - High avalanche mortality some winters
    - High variability in adult female survival (low annual survival rate: 78-96%)
    - Q: TOM: Was it possible there was a segment nonmigratory part of this herd before it changed? A: Yes.

- Distinct seasonal movements: high elevation in winter (10,000') drop down in spring (coincides with onset of spring greenup-NDVI), increases back up in summertime (but averages higher elevation in winter than in summer)
- Small population: WGFD winter helicopter surveys
    - 2008: 96
    - 2010: 81
    - 2015: 57
    - 2016: 46
    - 2017: 48
    - 2018: 76
    - 2019: 81
    - current population estimate: ~100
    - winter lamb:ewe ratio=27
    - Q: Do you have classification for the population estimate? A: Not a great count-tough to get these estimates.
    - Q: seeing marked sheep? A: difficult again-missing piece
    - Q: have you tried taking photographs during surveys? A: not for that purpose, no.
    - Genetically isolated and fragmented
        - 2 distinct populations (one to the north and one to the south) that do not interbreed with one another
        - have documented sheep that move in between, but they move back to their N/S areas if they wander
        - 2010 comparison of genetics of Teton Herd & Jackson Herd: within Jackson herd there is a lot of clumping, but in Teton herd, they are distinct between N&S herds (only 12-15 Kilometers away)
        - N: 44 sheep
        - S: 37 sheep
        - Hunting season: outside of GTNP: any ram (1 license)
        - Q: How many sheep in Jackson herd? A: 2-300 sheep in this herd
    - Backcountry skiing very popular on BT, exit resort to ski outside the resort in the backcountry: Bighorn sheep avoid backcountry recreation areas, even if high quality habitat
        - Winter recreation reduces available habitat (Aly Courtemanch 2014 models: 30% loss of winter habitat due to backcountry skier activity)
        - Q: Is there any loss in habitat quality due to this activity? A: Not loss of quality, just area.
        - Has been done for the entire range including Grand Tarhgee area but the area in Aly's models in 2008 (south of resort) is most pressured
            - 28 bighorn sheep collared in 2008

  - concurrent tracking with GPS devises with skiers to track disturbance
  - Teton bhs are extremely sensitive to human activity and show strong disturbance to areas where people are skiing
  - Winter recreation reduces available habitat
  - Bighorn sheep avoiding backcountry skiing activity areas, 30% loss of winter habitat
  - Sheep who live in areas with high recreation activity move around a lot more and expend a lot more energy and have larger home ranges in order to survive

- Peri Q: Do you have any idea of how goats are reacting to the backcountry use? (possibly pushing them into the winter range of bighorns) A: No.
- Proximity of skiers to wind-scoured areas for bighorns: did not look at specific distance of sheep being disturbed (but 400 meters was the model they used, where sheep elicited a response)
- Summer recreation use and its impact to bighorns-has not been looked at yet as winter range is more high pressure
- Antecedently: there were more sheep in center of range (where resort is and backcountry skiing impact is high)
- Lambing habitat: are people invading critical lambing habitat, early June in Tetons is sloppy but some levels of spring skiing still occurs-lambing is in pretty remote areas but have not looked at this specifically
- Other work has shown that ungulates can habituate to predictable types of disturbances (vehicles, etc.), but cannot habituate to backcountry skier behavior as it is unpredictable (random pattern of use on the ground, spiderweb of ski tracks, looking for untracked spots, etc.
- Higher daily movement rates and larger ranges of movement (displaced and being pushed around a lot more)
- 2 winter closures in GTNP to all human entry for bighorn sheep winter range (early 90s and 2000) North of this area but nothing on north end of the range (gaining in popularity for backcountry skiers), community respects these closures, but there are lots of other areas of winter range not yet protected
  - enforcement of closure areas: generally public respects closures "Don't Poach the Powder" campaign, occasionally a violation but pretty rare
- management of backcountry recreation
- concerted effort over past 1.5 years with goal of encouraging public to value herd, be aware of the herd and consider it a herd

Commented [BCJ4]: Is this correct?

valuable to protect, well over 40 meetings 1 on 1 with key stakeholders, and this is ongoing

- Why we are here today?
  - Teton bighorn sheep working group feels that this herd is at a breaking point and agencies must take conservation actions soon.
  - The Expert panel was convened to provide:
    - Review existing research, state of knowledge, current management strategies and conservation initiatives of the herd;
    - Identify critical data gaps in need of attention/improvement;
    - Recommend and prioritize management/conservation actions, research and other strategies to improve population resilience; and
    - Share expertise and thoughts with the public through a panel discussion

Panelists **general** thoughts/questions

- Increasing genetic diversity by bringing in source sheep within the N/S Teton herd
- Level of differentiation: recent past
- Peri: Since there is not any barrier for these sheep to move back and forth-dispersant of bighorns at carrying capacity and if there are other factors (not choose forcibly mixing these 2 populations-these sheep would not stick to these two areas-why make them if they don't want to)
- Tom: would not write off summer range quality, summertime nutritional study
- Clint Epps: estimated 100-125 sheep in 70/80s, winter counts underestimate lamb mortality, what proportion of these animals use the lick sites? Carson: Pretty much all of them. Photographic mark recapture, 10-15 natural mineral licks across the range, set up remote cameras, used mark/resite model for lamb at heel with collar marking (12 collared animals at beginning of 2018-picked up all but one animal on mineral sites-would need a higher proportion of marked animals), eartags not currently allowed but a very strong rational would be needed in order to allow for use (biodegradable plastic ear tags possibly?) "bling is in after all"
- Tom Stephenson: when do you do your captures? December-February winter captures. Is there any reason why you can't do it earlier? Softer landing when they are netgunned, in Sierras-captures are often done in fall (October) with less injuries (track summer range quality, not have to deal with avalanches/bad weather) and spring (March) captures with higher rates of injuries
- Tom (AK): injuries less than 2% in no snow and pre-rut captures, mostly done in March for pregnancy rates
- Clint: rut timeframe? Late Nov/early Dec-descend to mid elevations vs. on high peaks
- Social aspect: mountain goats comments? Still in process of analyzing them-characterize the comments generally as more supportive than less supportive, have conversations been happening with Teton Mnt. Resort: good faith partners and agencies have met

Commented [BCJ5]: Jackson Hole Mtn Resort?

with them numerous times and suggested some places that are appropriate/not for skiing

- Tom Stephenson: if everyone had a perfect ability to point people to a perfect ski area: direct people to specific areas-could you effectively keep skiers below a specific elevation or contour? Yes-there are opportunities. Some people are very influential and highly against closures in the Teton range. Areas have been identified as those of potentially amendable to being open to remedial action.
- Are there other population stressors that we have not identified that we should address? How many adult females are out there: in 2008 survey: 51 females, 2010: 48 females, 2018: 39 females, 2018 December: 33 females (combined), number of sheep (minimum count)
- Tom Besser: connectivity of the mountain goat population, is the movement still ongoing between the original reintroduction site and Tetons? A: this is not known.
- Doug McWhirter: mountain goat licenses had historically been a 1x license, but WYG&F now can place very, very high hunting pressure for goats on west slope of Tetons on USFS to discourage expansion on Tetons, harvest goats outside/moving outside of Tetons, how many goats live outside of the park year round? 5-10 + goats outside, 40 cross boundary=48 licenses this year and possibly upping this (1x lifetime license removed too)
- Carson Butler: fecal DNA sample & DNA from captures, Teton/Snake River/Absaroka-Beartooth herds were compared, Teton & Snake River were distant form A-B, Teton also distinct from Snake River goats-probably not much interchange between these herds (distance between them could be going either direction, increasing/decreasing?)
- Peri Wolff: if goats are doing so well and sheep are static-interesting to compare what goats and bighorns are eating (are they actually displacing them or are they using a different resource and population is increasing based on that)? Any historic information on this?
- Peri: population has dropped but to ID real driver of why population has dropped would be very valuable, yes? A Aly: perhaps Tetons could support 400 goats? Now is a better time to get a hold on the population now.
- Goats have colonized central portion of Tetons (Cascade Canyon), Sheep to N&S
- Clint Epps: What do goats to in the winter? They are also wintering up high. Generally in deeper/ledge systems while sheep are more on windswept plateaus. flight in Dec. they were on same patch of winter range.

Panelists thoughts on **Disease/Nutrition/Habitat**:

- Peri: reintroduction efforts in NV, m. ovi introduced with small die off but population bounced back, 2009-10 major die off in East Humbolt (15 survivors of 140 sheep) and Rubies, pathogen profiles of goats and sheep in these areas mirrored one another, experiment: eliminated remaining bighorns in East Humbolt and sent rams to research, brought in naïve sheep from Alberta (20 animals) and put them in with goats (kid recruitment almost nil), that had pathogens, tested sheep before they left Alberta and study was conducted with sheep-bighorns picked up very few pathogens, very low

reparatory disease until 2015-with documented die-offs (losses with pneumonia, same pathogens and same strain type between goats and bighorns), cannot prove that it came from the mountain goats-could have also been domestic sheep but there was ample evidence the goats and sheep were hanging out together, sheep also had sinus tumor, mnt. Goats never recovered, sheep at around 19 sheep now-barely hanging on, bighorn sheep all have full sweep of pasteurelas, those that are doing well no m. ovi, chronic poor offspring recruitment every year, could happen either way, managing goats for disease is not primary issue per say, would be most concerned if goats increased dispersal from range in ID, fence on refuge keeps sheep from Teton/Jackson herds from interacting? Static situation we have now doesn't seem to be as big a disease issue until/unless bighorn coming from another area or goat brings in disease, sinus tumors (infectious)

- Tom Besser: domestic sheep reservoir of infectious bugs very high
- Have all goats in Snake River Range been tested enough? No-not enough done. Only 14 tested over course of 6 years. It would be worth doing all 15 tests (serology). examples from several states where testing was done-more thorough testing could be done, potential for contact
- If you are to remove goats this doesn't, need more health evaluation of 2 populations that are there-how to keep them free from risks, how to eliminate all potential risks?
- Unsuitable habitat between core of goat population in Snake River Range and Teton Pass/Tetons, it's foray goats that head to Tetons-not a lot of continual movement in between (bridge is not really there right now but want to keep it from moving)
- Could Teton mountain goats expand in movement down to Snake River range? They do not know what population conditions were to have these goats move. But in 80/90s goat population was greater than it is today-high hunting pressure and habitat degradation and lots of goats moved out-but numbers dropped now 120-150 goats on ID side. Not a lot of movements back and forth-nothing to keep them from moving back and forth, though. Collars were put on border of ID (Hollie M. from ID)-goats are right along the border.
- Do agree with Peri-contact with domestics, transfer of disease between sheep outside/brought in, GYA metapopulation has # of m. ovi strains that are genetically similar-- hypothesizes that these are spillovers that happened long ago, some populations are doing reasonably well, also in Desert area-cluster of population, hypothesizes that strains have become less virulent possibly or a new spillover would be greatest risk
- Carson: no matter what we do with goats, the risk of a goat carrying a bug from Snake River range and bringing it in-is this dependent on population of goats and small bighorn population? 2 best examples of long persistence of m. ovi (Whiskey and ? basin), bigger risk of persistence given larger starter population, mountain goat behavior-eat out of habitat and then go back down-are billies out foraying too?, look at number of different pressures from mountain goats, address population (decrease load of ungulates to predators, creating a sink after goats leave area?), if most likely transmission from goats

Commented [BCJ6]: Would

to sheep is Snake to Tetons-m. ovi is established then having a large population of goats in Tetons will increase risk of disease to sheep, need to learn more about goat behavior

Summer range habitat

- Tom: with climate change and warmer summer patterns, growth is less, decreased pregnancy rates, 18-25% low pregnancy rates-what are the causes? Protein limitation-less available protein, dips into 70%s-certainly an avenue of investigation moving forward, if productively is low-is it a nutritional based, Roman Dile at APU-overall habitat loss conversion of habitat to alder (AK)
- Mike Mirligiano-tracked vegetation over last century or more, general gist-alpine not changed at all, but if anything-increase in herbaceous (very small), crumholtz-same spot as they were 100 years ago, as are alpine willows, warming has increased productivity (limiting is snow and cold), changes are super slow

Loss of and re-establishment of low-elevation winter range

- Would you recommend making attempts to reestablish bighorn sheep at the historic low elevation winter ranges that are still deemed suitable habitat?
    - 2 scenarios: prescribed burning to open up historical winter ranges or try to reestablish longer range migrations-into Jackson and ID? Prescribed burns have been done on west side on USFS (limited to low elevation-not a continuous strip into alpine)-results have been pretty marginal
    - in order to reestablish migration patterns need large catastrophic fires (Tom Stephenson)
- Tom Stephenson: wintering up high sheep-density-dependent component to migration, not enough competition for them to move down, see a lot of switching in populations and individuals based on nutritional status, wintering up high-avoid predation risk, strategy when undisturbed is to hunker down and limit their movements, don't really know summer range condition to assess body fat/condition too-ideally this would be helpful
- Difficult to catch sheep (Aly): are there other ways to get at summer nutrition that are less hands on animals, don't have to handle that many sheep (lactating ewes in fall) to get a good feel (Tom S.)-get your hands on 10 ewes (good sample, even less than that can be informative), try to do it in the fall-to asses condition of animals as they go into winter, not a great substitute besides getting hands on sheep
- Natural ignition of fire would be positive for Teton herd as prescribed burns are getting more difficult (have mechanisms in place to allow these fires to burn)
- Social and forest ecologists should be in the room too: increased public aversion to large fires can be very challenging so this should be worked on now
- Hollie M.-ID trouble: private farm flocks, allotments, winter range that is not that good comparatively, most conflict at low elevation (people, animals, etc.)-lots of risk associated with this, Big Holes is a highly used area (recreationally and domestics too), measuring fat on animal is best way to nutritionally analyze sheep, vegetation nutrition model is also another project ID is working on

- Michael-Teton River Canyon: would take a catastrophic fire to open this winter range up, no disease issues here with domestics but conflicts with other wintering ungulates, but Hollie doesn't feel this is ideal habitat in many settings
- Mike M.-old photos with fire impacts-lots of the burns had mature cycles too and lots of generations of sheep had to move between these areas too (different than you might think)

Genetics/Demographics/Human Disturbance

- Given what you have learned relative to the Teton herd, please provide your thoughts relative to local extinction if no conservation activities are taken?
- What has been done: Winter closures on most significant ranges, eliminated domestic sheep grazing on range, small scale prescribed burns, if population hasn't changed since 70/80s would it have if these things haven't been done?, static population but it seems to be on the edge
- Most concerned: new stessors showing up (like goats, increasing number of skiers reaching further back in), they should not be disturbed in their winter range (ID these specific areas-could look at this quickly), kick out skiers to avoid disturbance
- Clint Epps: Generally, the population probably could putter along but at a time when population was down and a significant number of issues happened all at once, yes, the population could die out, could persist for a long time but concern is that there is no ability for potential rescue
- Loss of connectivity with other populations does not allow for ability for herd to be rescued to any degree, is there a source of clean sheep that lives up high somewhere that could augment this population?
- Clint Epps: genetic situation in Teton herd-heterozygosity .6 in N Teton herd-sitting the same as Jackson herd, not genetically disparate, genetic rescue of insular bighorn sheep (Jack Hogg's work)-nonnative population founded from 5 individuals, gave lots of comparisons to other areas across west-they can do really well with low genetic diversity for a long time, maybe can matter more with disease presence and introduction, need to get better feel on population, how to connect N&S herds-experience moving individuals-more luck moving a limited # of females with younger rams with them-move in late spring as they are closer to giving birth and more likely to give birth and stay put so better luck, females don't tend to associate with each other but do eventually start to mix in after a year, wintering high sheep-use these for similar habitat strategies, disease risk is too high to move sheep from Absaroka area into Teton area even though those sheep are wintering high elevation
- Hunting: is it sustainable to be removing 1 ram every 1-2 years? How selective have hunters been for larger rams? Selective but not always more than ¾ curl. Southern population is concerning-always have to assess the value hunting in this area brings to the situation and if this is valuable/engender support/not for this herd, in past 15 years 15 rams-all from southern segment-not great (lower genetic diversity), not seeing many mature rams in southern area on flights, how important is this tag?, change regulations to direct harvest to the northern segment-could be restricted to this area or once every

Commented [BCJ7]: Minimize disturbance by skiers?? Don't want the words "kick out skiers" getting out.

few years strategy-keep concept of hunting in the herd, 2 is unsustainable 1 might not be, especially with focus on southern segment of herd, everyone collectively taking action (all recreationists/users)

- Do rams and ewes typically winter in same area? Generally yes. If there was competition-how well are the survey's capturing this information?
- Any other evidence of movement?

Human disturbance: Is there any merit to the idea of developing habituation to humans in these sheep as a means to mitigate negative effects of disturbance?

- Lots of sheep in other areas are habituated to humans (NV, CA, etc.)
- Focus skier activity for predictable backcountry use-share some ownership and build support for this change, example in Yellowstone when over-snow vehicle studies were put in place: research showed that if travel was predictable they don't respond in a very narrow corridor, takes both consistency in space and time (pay people to go skiing)
- Spatial specificity might be a way to approach this-some hard closures but other areas where more nuanced areas can be allowed, except for 2 hard closures in park, skiers are going everywhere, on west side-skiers go up canyons (predictable so not large impact to sheep)
- Specific points demonstrating sheep movement patterns related to backcountry skier use (visitor use vs. local population demographic), nutrition with extreme athletes-connect this idea to what's happening to the sheep, Whistler example-bear activity "chaperoning" wildlife

Migration Restoration
Already covered in earlier conversations.

Mountain Goats

- Bob Garr~~e~~ott MSU study: niche partitioning, bighorn sheep and mountain goat study of goats that colonized a bighorn sheep herd, looked almost identical in that no niche separation between the two species, could not detect any major niche separation between them, goats move to mid-elevation ranges and occupy steeper terrain and don't avoid conifer as much, summer range might not be as big a deal but on winter range in high elevation-displacement might occur and have higher impact as the displaced don't have a place to go, when competition for a limited resource-goats almost always displaced sheep (show pointy horns scares sheep off), goats can be almost exclusively browsers (lichens, conifers, etc.)-can do better than sheep with challenging nutritional situations
- Shawn Stewart, northern GYA-had 40 years of sheep/goat interactions, Hell Roaring bighorn sheep north of YNP-lots like Teton Herd (60-90 nonmigratory, high elevation winter range), for a long time sheep did well, April 1991-4 ft snowstorm on high elevation range with no wind and snow stayed up high, already goats were resident in the area sharing goats (nonnative), 14 sheep were alive next spring, goats dropped in elevation and went in conifer and survived better-currently 60 goats in this winter

range, sheep never recovered, 30 bighorn now but shifted range to low elevation area that burned, climate change bringing high likelihood of rain over snow events in mid-winter

- Teton herd is a high elevation sheep herd and above is an example of where goats colonized a herd, nonnative species with negative impact on native species-NPS protocol is to focus on maintaining native species in unimpaired position, TNP still thinks there's room with #s of sheep remaining in this herd to try a management strategy
- At least 300-350 mountain goats in YNP, bighorns here all have pathogens and a history of chronic pneumonia, has a larger extension of goat population in and out of the park boundary, goats tested positive for pathogens too
- Hunting season for goats in the Park-GTNP elk reduction program-part of enabling legislation, would require a congressional act in order to harvest goats in traditional sense (goat season), other parks do allow removals "skilled volunteers"
    - Grand Canyon bison hunt example (NPS permission)
- Talk of contraception (mountain goats): nothing approved, Zoos-PZP 1 shot could be almost permanent sterilization (other ovis species) for a long-lasting injection, might be something to look at being explored (non food animal?), population check opportunity for mountain goats-is there a way to deliver it in another manner, efficacy is a problem for PZP in the wild, in a dart-no one has been wanting to fund the work of a permanent sterilizer in wildlife, possibly explore this more as it might allow for public acceptance NRC resource for review of wildlife sterilization processes

What is the reason for focusing on the Teton herd versus other herds that are could be prioritized? Should we just let it go?

- Herds in region (Jackson) are not robust
- Teton herd is unique-high elevation but vulnerable, care about them-native herd
- Biologically if lost, would it matter for the species?
- Social values-GTNP role parks play in conservation as a holdout for sensitive wild animals-to give up on this herd would be a bad symbol for the public, the vast amount we don't know about natural adaptation so hanging on to them is valuable
- It's our obligation as wildlife professionals
- Clean comparatively to other regional herds
- They've figured out how to survive, it would be a travesty to let them blink out
- NPS mission statement is built upon the concept of wildlife being core-wildlife comes first and maybe we need to put our foot down-if it's not going to happen in NP's where would it?
- Idaho values native core herds too, we don't want to lose any more, it's the state's most diverse genetically population, native population regardless of its size is valuable
- Plenty of other examples, Florida mountain lion, etc.

Breakout groups

Added notes from each group from flipcharts with priorities starred:

1. **Group 1: Disease/goats recommendations/data gaps:**

a. assessing risk and what to do with each risk
    i. Remove goats from Tetons
    ii. focus on keeping Jackson sheep and Palisades goats from coming to Tetons
    iii. need to ensure mechanism is in place to remove newly arrived goats quickly
    iv. Disease assessment & risk reduction, identify domestic sheep locations nearby & map. Talk with owners
    v. address pack goats on National Forests
    vi. More ram collaring to identify risk of movement/foray from Jackson
b. Increase work addressing less invasive sampling techniques for population & health monitoring
    i. Body condition using cameras/other methods in conjunction with continued captures
    ii. Cameras at mineral licks and movement corridors to monitor lamb ratios/numbers
    iii. Citizen science project to monitor sheep
    iv. Place cameras on winter range to monitor sheep & public interaction/outreach
c. Direct sampling of animals (sheep and goats)
    i. Include hunter harvest sampling too
    ii. Prioritize sampling carcasses, even old ones
    iii. Strain typing in surrounding herds (increase samples & newer samples)

2. Group 2: Demographics/genetics recommendations/data gaps:

a. Improved population estimates
    i. Small population interventions: are older ewes productive? Is habitat limited?
    ii. Use mark/resight (natural/antro marks) & camera/aerial survey techniques (photograph during aerial surveys)
b. Update information about gene flow (microsatellite research)
    i. Fecal DNA (population size, forage, survival, recruitment, sex ratios, licks, known bedding areas)
c. Genomics and better understanding of genetic drift (much better measures of inbreeding now)
    i. Better understanding of paternity (how many rams breed & what ages?)
    ii. Rate drift/hunting management
d. Moving sheep:
    i. within Tetons (North vs South): south segment is getting low enough to worry about
    ii. limit/eliminate hunting in south
    iii. consider moving pregnant females and youth males (CAUTIOUS)
    iv. outside augmentation not recommended at this time (worth thinking about trigger point, look to SN bighorn sheep program)

Commented [BCJ8]: Did Clint actually recommend this now or if things got worse? I left thinking the recommendation was to not move sheep.

e. Preserve what is here, manage threats
    i. Recreation, goats, keep closures an option but keep monitoring/assessing too, winter range treatments, snowmachines?,

3. **Group 3: Nutrition/habitat/human disturbance recommendations/data gaps:**
    a. Data gap on body condition, Method: do October captures
        i. Summer range, pregnancy rates, robustness of survival, easier captures?)
        ii. Consider cumulative effects of winter (high winter mortality, climate change=rain on snow, potential nutritional stress)
        iii. Surveys-take photographs to classify sheep
        iv. Lamb survival and recruitment with monitoring of bottle necks (winter starvation?, what is the bottleneck?, concentrated lamb surveys in the spring & fall on some collars)
        v. What is the impact from captures? Hunting? (overall short lived effect, lots of different types of disturbance)
    b. Recreational impact and impacts on sheep
        i. Challenge: unknown recreation growth
        ii. What is the signal indicating there is recreational impact? (low pregnancy rates, starvation, demographic effect, recruitment, ratios)
        iii. Quantify user days (improve/add trail counters at backcountry gate, identify types, abundance, timing & locations of winter use)
        iv. Establish baselines (both in winter & summer)
        v. North: no potential for habituation
        vi. South: maybe potential for habituation
        vii. "Please don't pin it" #Responsibility (social media)
    c. Use imagery to develop layers and impacts from snowpack, habitat, etc.
        i. Identify windswept areas and snow cover layers
    d. Other Recommendations:
        i. Remove Goats
        ii. Winter range treatments (prescribed fire)
            1. Not much opportunity for habitat improvements in winter range?
        iii. Ultimately: Unknown recreation growth and trend upward and goats, every day we're losing traction on management alternatives, so indeed it's a crisis and action is needed

Commented [BCJ9]: Wonder if we could look at helo surveys in recent years in compare north vs. south lamb ratios.

Commented [BCJ10]: Baseline of human visitation?

Other additional notes captured:

- Comparisons with remnant desert bighorns?
- Is south Teton herd genetically restricted?
- Don't write off summer range.
- Salt licks & DNA sampling-is this a possibility?
- Need disease related recommendations for Teton herd.

Wrap

- Many of these strategies would be able to be implemented relatively soon

Teton Range Bighorn Sheep Working Group-Sheep Summit
Professionals Session: March 12, 2019, 8am-4pm, Jackson, WY

- Funding timeframes:
    - Gov. big game license coalition (May 22/23 decision time for approving projects) $500,0000
    - Wild Sheep Foundation: July application timeframe, autumn announcement
    - WY Wild Sheep Foundation: May application timeframe, June announcement

Logistics review for tonight & tomorrow

Tonight's public meeting:

- Data gaps and research needs
- Audience for immediate actions: controlling goats and recreation

Re_ Comment summary.pdf

From:	Noon, Daniel
To:	Dewey, Sarah
Subject:	Re: Comment summary
Date:	Monday, April 8, 2019 1:16:40 PM
Attachments:	Internal Draft Public Correspondence Analysis (2019-03-01).docx

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Hi Sarah,

We did not complete a formal summary report. Attached is a brief summary including the potential substantive correspondences list.

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Mon, Apr 8, 2019 at 10:05 AM Dewey, Sarah <sarah_dewey@nps.gov> wrote:

> Hey Daniel,
>
> I thought that you or Amanda had also summarized the comments on MTG Plan, but I can't seem to find such a document. If you guys did, could you share with me again? Thanks.
>
> Sarah
>
> --
> Sarah Dewey, Wildlife Biologist
> Grand Teton National Park
> Science and Resource Management
> P.O. Box 170
> Moose, WY 83012
> (307) 739-3488

Internal Draft Public Correspondence Analysis.pdf

DRAFT – DELIBERAIVE – INTERNAL USE ONLY

Mountain Goat Management Plan / Environmental Assessment

Public Correspondence Analysis

A total of **202 correspondences** were received (203 documented in PEPC) during the comment period of December 4, 2018 to February 15, 2019. *Note*: one correspondence is considered a duplicate with supplemental information provided (correspondence #201).

Support (number of correspondences)

EA Alternatives
Alternative A (no action): 32
Alternative B (lethal removal): 8
Alternative C (lethal and non-lethal removal): 44

Support removal (no alternative identified): 19

Other Options
Removal by hunting (dismissed in EA): 66
Only non-lethal removal (dismissed in EA): 20
Consider non-lethal is as first priority: 10

No specific support provided: 3

Types of Comments Received (in order from most to least mentioned)

- Other factors leading to the decline of bighorn sheep
    - Disease transmission
    - Displacement
    - Predation
    - Habitat (winter range, lower elevation development, etc.)
    - Winter recreation (including restrictions)
    - Climate change
- Native versus non-native
- Translocation areas to consider
- Carcass removal
- Other research to consider
- Coordination with Wyoming Game and Fish Department and neighboring land management agencies for:
    - Bighorn sheep management
    - Hunting within park
    - Management of adjacent goats outside of NPS units
    - Translocation of goats to other areas
- No relocation to zoos
- Funding and capture assistance
- Leave a small population of mountain goats in place
- Fertility control measures
- Low flying aircraft (acoustic environment) impacts
- Relocate bighorn sheep outside of park
- Provide hunting in park legislation
- Vaccines to reduce disease transmission
- Skilled volunteers
- Goat introduction and migration clarification in EA
- Interpretation and education
- Effects of field activities on wolverines
- EA errors

DRAFT – DELIBERAIVE – INTERNAL USE ONLY

Correspondences to consider as substantive (preliminary review)

5. Disease transmission, winter range
8. Wolverines
15. Native versus non-native
31. More research needed
41. Relocate bighorn sheep
43. Goat translocation areas
57. Fertility control measures
66. Other threats to bighorn sheep to consider
74. Current research presented at UW Research Center (AMK Ranch)
85. Aircraft impacts, fertility control measures
88. Climate change, disease transmission
103. Native versus non-native
113. Carcass removal
125. Goat translocation areas
127. Goat translocation areas
130. Disease transmission
141. Education
152. Carcass removal, education
162. Wyoming Game and Fish Department
163. Rocky Mountain Goat Alliance (provide assistance)
181. Disease transmission
182. Shoshone-Bannock Tribes-Fort Hall Business Council
183. Wyoming Wild Sheep Foundation
184. Greater Yellowstone Coalition (long-range planning and coordination)
187. Goat translocation areas
188. Skilled volunteers, translocations, monitoring (to prevent future goats from entering park)
190. Recreation management, state/federal coordination, bighorn sheep supplement, Jed Smith Wilderness
192. Competition, disease transmission
193. Costs, funding, goat translocation areas
202. Wyoming Department of Agriculture (non-native species management, disease transmission)
203. Goat introductions, acoustic environment, carcasses, winter recreation, “unskilled” volunteers, goat migration, vegetation (including errors), coordination with entities accepting goats

Re_ DELIBERATIVE_ Draft MOGO SLT read Ahead - I....pdf

From: Noon, Daniel
To: David Gustine
Subject: Re: DELIBERATIVE: Draft MOGO SLT read Ahead - Invitation to edit
Date: Tuesday, April 16, 2019 4:02:06 PM

Hi Dave,

I provided edits and additions to the draft read-ahead. Gopaul requested that I (b) (5) [redacted]

Please provide me your input as soon as you can; Sue and I will be meeting with Gopaul Friday afternoon and it would be good to have the read-ahead to him by Thursday. Feel free to share the draft read-ahead with Sue when you're ready.

Thanks for drafting the read-ahead!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Fri, Apr 12, 2019 at 9:53 AM David Gustine (via Google Docs) <drive-shares-noreply@google.com> wrote:

dave_gustine@nps.gov has invited you to **edit** the following document:

DELIBERATIVE: Draft MOGO SLT read Ahead

Made a rough stab at SLT read ahead for MOGO...I'm headed to fundamentals tomorrow until Apr 29, but hopefully should have access to email.

thanks Daniel!

Open in Docs

Google Docs: Create and edit documents online.
Google LLC, 1600 Amphitheatre Parkway, Mountain View, CA 94043, USA
You have received this email because someone shared a document with you from Google Docs.

Mountain Goat Management Plan_EA Communications....pdf

From:	Noon, Daniel
To:	Gopaul Noojibail; Susan (Sue) Consolo-Murphy
Cc:	Erin Martin
Subject:	Mountain Goat Management Plan/EA Communications Plan and Requested Correspondence
Date:	Friday, April 19, 2019 4:18:58 PM
Attachments:	Communications Plan Mtn Goat Management Plan 8.6.18.docx Kilpatrick - Wyoming Wild Sheep Foundation - Mountain Goat Plan-EA Correspondence.pdf Schmid - Wyoming Game & Fish Commission - Mountain Goat Plan-EA Correspondence.pdf Wyoming Department of Agriculture - Mountain Goat Plan-EA Correspondence.pdf Wyoming Game & Fish Department - Mountain Goat Plan-EA Correspondence.pdf

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Gopaul and Sue,

As requested, attached are the latest Mountain Goat Management Plan/EA communications plan and the following correspondences:

- Kilpatrick - Wyoming Wild Sheep Foundation
- Schmid - Wyoming Game and Fish Commission
- Wyoming Department of Agriculture
- Wyoming Game and Fish Department

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

Communications Plan Mtn Goat Management Plan _2.pdf

Communications Plan

Grand Teton National Park &
John D. Rockefeller, Jr.
Memorial Parkway

Mountain Goat Management Plan/Environmental Assessment

Public Release of Environmental Assessment

8/6/2018

For Internal Discussion Only
Do Not Distribute

Communications Plan

GRTE/JODR-Mountain Goat Management Plan

This plan establishes a framework for communication with park staff, neighbors, stakeholders, local communities, elected officials, and the general public during release of the Draft Mountain Goat Management Plan/Environmental Assessment (EA).

Issue Background

Mountain goats are not native to Grand Teton National Park and the Teton Range. The goat population that currently resides in the Teton Range likely dispersed from a population introduced in the Snake River Range by the Idaho Department of Fish and Game roughly 20 miles south of the Park more than 45 years ago. The population of mountain goats is growing at a rapid rate and beginning to expand into habitats important to a native population of bighorn sheep whose status is very tenuous. Management of mountain goats is needed to address the impacts that mountain goats could impose on natural resources within the park, particularly to the native bighorn sheep population.

In 2013, the park began developing a management plan for mountain goats and concurrently initiated the environmental compliance process. A target date of late August release the plan/EA has been identified. The preferred alternative identified in the EA, calls for the translocation of as many goats as can be captured. Remaining goats would be lethally removed using contracted or government-employed staff.

Objectives

This plan is intended to guide strategic communications about management of nonnative mountain goats within the park during the release of the Draft Mountain Goat Plan/EA and implementation of the final plan.

The objectives of this plan are to:

- Identify key messages to share with the public and other interested parties regarding the current population status of native bighorn sheep and nonnative mountain goats in the park and actions proposed in the EA;
- Identify key tasks and timelines to complete those tasks with the goal of releasing the Draft plan/EA in late August;
- Identify roles and responsibilities for completing tasks identified on the timeline.

The expected outcomes of this strategic communications plan are:

1. Enhanced public understanding of the threat nonnative mountain goats present to native Teton Range bighorn sheep population;
2. Enhanced public understanding of NPS management policies that support the removal of nonnative mountain goats;
3. Open and transparent communications with the public regarding proposed management actions (including lethal removal of mountain goats);

Key Messages:

- Mountain goats are not native to Grand Teton National Park.
- The park has a responsibility to protect native species and reduce the potential for local extinction of a native species.
- As of early 2018, the mountain goat population within the park was estimated be around 100 individuals.
- The Teton Range is home to a small, native population of bighorn sheep whose status is tenuous.
- Due in part to its small size, the Teton Range bighorn sheep herd exhibits low genetic diversity and is genetically isolated from neighboring herds.
- Currently the bighorn sheep population is estimated at about 80 individuals. Prior to 2015, the population was estimated to be approximately 100-125 individuals.
- The potential for resource competition and pathogen transmission between mountain goats and bighorn sheep is expected to increase.
- Without active management the mountain goat population is expected to continue to grow and expand its distribution within the park.
- The rapid reduction of the park's mountain goat population is vital for the continued existence of the Teton Range bighorn sheep herd.

Talking Points:

- Action is needed now because:
    - A breeding population of nonnative mountain goats is established in the park. The presence of mountain goats presents threats to the already stressed native bighorn sheep herd through increased risk of pathogen transmission and competition.
- Without immediate intervention, the mountain goat population is expected to grow rapidly and expand into habitats important to bighorn sheep within the park.
- Recent monitoring suggests this bighorn herd has undergone a recent population decline and is facing multiple environmental stressors that put its future in question. The sheep herd has never been extirpated and repopulated, or augmented. This local bighorn sheep herd is of high conservation value to the park, adjacent land and wildlife managers, and visitors. It is important that a healthy population of this native species is present and persists within the park.
- Reduction and elimination of the mountain goats will be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats.
- The mountain goat population is currently at a size where complete removal is achievable in a short time frame; however, the apparent growth rate of this population suggests that complete removal in the near future may become unattainable after a period of about three years.
- The draft plan and EA describes and analyzes three alternatives:
    - **No action:** mountain goat population monitoring would continue, but no active population reduction would occur, except if needed to address a human safety concern.
    - **Lethal and non-lethal removal (preferred alternative):** a combination of capture and translocation, and lethal removal methods would be used to reduce the mountain goat population within the park.
    - **Lethal removal:** mountain goats would be lethally removed from the park using a variety of aerial and ground-based techniques.

Timeline

Task	Primary Responsibility	Date to Complete/Implement
Send Draft EA to IMR for review.	Daniel Noon	May 2018
Send tribal consultation letters	Sue Consolo-Murphy	August 2
Inform state wildlife management agency staff of anticipated release of the plan/EA. Update consultation/coordination section of EA.	Sue Consolo-Murphy	July 20
Complete communications plan and IMR briefing statement. Prepare for public open house. Schedule venue location, date, and time.	Denise Germann	August 6
Revise draft EA based on IMR comments	Daniel Noon/Dave Gustine	June 29
Complete final IMR environmental quality review of plan/EA	Heather Rice (IMR)	August 3
Brief deputy superintendent on revised plan/EA, communications plan, briefing statement, skilled volunteer dismissal, public open house, etc.	Daniel Noon	August 6
Obtain approval from regional director to release plan/EA to the public	Daniel Noon/RD	Submit August 8. Obtain approval by August 24
Release EA to the public for 30-day review and comment. Implement final communications plan	Daniel Noon Denise Germann	August 28 to September 30
Public open house in Jackson.	Denise Germann Sarah Dewey	Week of September 10
Submit Biological Assessment to US Fish and Wildlife Service	Sarah Dewey	October 1
Review of public comments	Daniel Noon	October 1
Complete tribal consultation	Sue Consolo-Murphy	October 5
Brief deputy superintendent on public comments received, draft decision document, and communications plan (decision document release).	Daniel Noon	October 15
Prepare decision document	Daniel Noon	October 12
Complete USFWS ESA consultation	Sarah Dewey	October 12
Brief superintendent on decision document and communications plan	Daniel Noon	October 22
Submit decision document to regional director for review and approval and submit IMR weekly report as appropriate	Daniel Noon	October 23
Release decision document to the public and continue to implement communications plan	Daniel Noon Denise Germann	November 6
Aviation request, contract, and project aviation safety plan	Sarah Dewey	Fall 2018
Internal and external implementation outreach efforts	Sarah Dewey	Fall/Winter2018

Begin plan implementation	Sarah Dewey	Winter 2019

Key Contacts and Communication Tools to Share Information

Key Contact	Contact Info	Staff Assigned	Notification Tool	Due Date
Senior Leadership Team		Sue Consolo-Murphy Daniel Noon	SLT Meeting Email message, media release, FAQs	
Permanent and Seasonal Employees, Volunteers	GRTE_All_Employees@nps.gov GRTE_Seasonal_Employees@nps.gov	Denise Germann	Email message, Media Release, FAQs	
IMR Regional Office – Key Contacts		Daniel Noon, Sue Consolo-Murphy	Email/Phone Call	
IMR Weekly Report	August 8 and October 23?	Denise Germann	Weekly Report Submisisomn	August 8 October 23?
GRTE Concessioners/CUA Holders		Denise Germann	Media release	
General public/planning contacts		Denise Germann	Media release, scoping brochure	
Bridger-Teton National Forest		Dan Reinhart	Meeting, email, phone call	
Wyoming Game and Fish		Sue Consolo-Murphy		
Native American Tribes		Sue Consolo-Murphy	Letter	
US Fish and Wildlife Service				
Elected Officials		Denise Germann	Media release	

FAQs

Q. What is this mountain goat plan all about and why is it needed?

A. The purpose of the plan is to allow the NPS to reduce or eliminate impacts to park resources from exotic mountain goats, while improving the long-term survival prospects for the native Teton Range bighorn sheep population.

Management of mountain goats is needed to address the impacts that mountain goats could impose on natural resources within the park, particularly to sensitive alpine and subalpine vegetation communities and a native bighorn sheep population whose status is tenuous.

Q. What effects are nonnative mountain goats having on the Teton Range native bighorn sheep population?

A. -Competition

-Mountain goats from the source population in the Snake River Range have been documented to carry *Mycoplama ovipneumonia* and (how many pasteurellas??) which are known to cause fatal pneumonia outbreaks in bighorn sheep (citation). In addition, disease testing of the mountain goats in the Teton Range indicates that these goats carry at least ## pathogens which can contribute to pneumonia. To date, with limited sampling, two of these pathogens have also been detected in the bighorn sheep herd, but a third (B. trehalosi) has not. An estimate of the exact risk, the mountain goat present to the struggling bighorn sheep population cannot be determined. However, exchange of pathogens and subsequent disease manifestation has been documented between mountain goats and bighorn sheep (provide citation) and wildlife professionals agree that the unquantified level of pathogen transmission risk between the species warrants a proactive management approach. As the mountain goat population continues to grow and expand into areas occupied by bighorn sheep, preventing exposure will become increasingly difficult. Although current exposure risk may be low at this time, the devastating consequences and the lack of tools to mitigate population level effects on bighorn sheep necessitate aggressive and proactive management of the mountain goat population. What are the alternatives?

Q. What are the alternatives in the EA?

A. **No action:** mountain goat population monitoring would continue, but no active population reduction would occur, except if needed to address a human safety concern.

Lethal and non-lethal removal (preferred alternative): a combination of capture and translocation, and lethal removal methods would be used to reduce the mountain goat population within the park.

- **Lethal removal:** mountain goats would be lethally removed from the park using a variety of aerial and ground-based techniques.

Q. How can you be certain that removing mountain goats will be beneficial to bighorn sheep?

A. The viability of the Teton Range bighorn sheep population is dependent on several variables, including providing secure quality habitat, reducing risk of disease transmission and reducing competition for space and food. Removing mountain goats is a primary action in the continued existence of the Teton Range bighorn sheep herd.

Q. Why can't fertility control be used?

A. Fertility control would not be effective in meeting the plan/EA objectives for several reasons:

- There is currently no contraceptive approved for use in mountain goats and no effective drug delivery method is available,
- Fertility control would not address the risk that mountain goats present to bighorn sheep from possible disease transmission and competition or address concerns about impacts to vegetation, and
- Fertility control is effective for a limited amount of time and would require multiple applications.
-
-

Q. Why can't bighorn sheep be vaccinated to protect them from mountain goat diseases?

A. There is not an effective vaccine for the diseases of greatest concern. Past researchers have attempted to develop vaccines for bighorn sheep, but none have been effective. Vaccine development is extremely expensive and unless wildlife diseases threaten humans or livestock, insufficient funds are available for vaccine development. If an effective vaccine existed, delivering it to a sufficient number of the Park's bighorn sheep would not be feasible because the animals spend the entire year in inaccessible areas.

Q. Why can't the park just let bighorn sheep and mountain goats co-exist in the Tetons?

A. Bighorn sheep and mountain goats do co-exist as native species in parts of North America. Under different circumstances the Park might consider allowing non-native mountain goats to remain in the Tetons, however, given the perilous status of the Teton Range bighorns the park has a responsibility to act to prevent displacement of the native bighorn sheep population, maintain the ecological role of bighorn sheep, and reduce the potential for local extinction of a species. Research shows that there is high similarity in habitat use between mountain goats and bighorn sheep in the Greater Yellowstone Ecosystem (GYE), which indicates there is also high potential for competition and disease transmission between the two species. Fortunately the full suite of pathogens that cause pneumonia in bighorn sheep have not been found in mountain goats or bighorn sheep in Teton Range. However, these pathogens have been detected in the nearest mountain goat populations to the south and northeast of the Teton Range. Whereas non-native mountain goats in the GYE have continued to colonize new range as their populations grow, neighboring bighorn sheep populations are not expanding their range. It is more likely that pneumonia pathogens will be introduced to the Teton Range by colonizing mountain goats than by bighorn sheep and colonizing mountain goats are more likely to interact with their own species than bighorn sheep. This means that resident mountain goats in the Teton Range will be a reservoir to amplify any pathogens introduced by colonizing mountain

goats. Mountain goats will at best have a neutral effect on bighorn sheep in the Tetons and at worst they will facilitate local extinction of one the Park's most iconic native wildlife species.

Q. Why can't the park just let predators take care of the mountain goat population?

A. Bears, wolves, mountain lions, eagles, and wolverines are all predators of mountain goats, especially young of the year also called kids. Given that mountain goats live in steep, rocky terrain close to cliffs that predators have difficulty navigating, it is unlikely that any of these species would play a significant role in limiting the mountain goat population. This is especially true where alternate prey such as elk are readily available. This method of control would not be effective in meeting the purpose and need of the plan.

Q. How do you know that goats are not native to the Teton Range?

A. Several peer-reviewed scientific papers have concluded the distribution of native and introduced populations of mountain goats in North America. Some of these articles have been referenced in the plan/EA.

Q. Where are mountain goats considered a native species?

A. The native range of mountain goats extends from southeastern Alaska south to the Columbia River in Washington; east into Idaho and western Montana; and north to southern Yukon (http://explorer.natureserve.org/servlet/NatureServe?searchName=oreamnos+americanus; Distribution section).

Q. How did the current mountain goat population end up in the park?

A. Preliminary analysis of genetic material strongly suggests that the current mountain goat population in the Teton RangeThe goat population that currently resides in the Teton Range likely dispersed from goats introduced in the Snake River Range and the Big Hole Mountains by the Idaho Department of Fish and Game roughly 20 miles south of the southern Park boundary more than 45 years ago. At the time, this was a common practice undertaken by state wildlife management agencies to establish new big game populations for the benefit of hunters. Park biologists are currently working with a wildlife genetics laboratory to confirm the population of origin for the mountain goats in the Tetons.

Q. Why can't bighorn sheep be vaccinated to protect them from mountain goat diseases?

A. There is not an effective vaccine for the diseases of greatest concern. Past researchers have attempted to develop vaccines for bighorn sheep, but none have been effective. Vaccine development is extremely expensive and unless wildlife diseases threaten humans or livestock, insufficient funds are available for vaccine development. If an effective vaccine existed, delivering it to a sufficient number of the Park's bighorn sheep would not be feasible because the animals spend the entire year in inaccessible areas.

Q. What is the current population of goats in the Teton Range?

A. Biologists currently estimate about 100 mountain goats reside in the Teton Range.

Q. What are differences in mountain goat management planning between Grand Teton National Park and Yellowstone National Park.

A. Grand Teton proposes to remove the population of mountain goats that has recently colonized the park. The size of the mountain goat population in the park is still small enough (~100 individuals) that removal could be successful within a discrete time frame. At this time, mountain goat habitat within the Teton Range is distinct from possible source populations to the north and south and biologists do not believe that mountain goats are continually dispersing to the Teton Range from source populations. In contrast, mountain goats have almost completely colonized suitable habitat within Yellowstone National Park. More than 600 mountain goats currently reside in and adjacent to Yellowstone. Roughly 200 goats occur in the northeast and northwest portions of park and continuous habitat occurs along the eastern and western boundaries. Given the continuous distribution of goats adjacent to suitable habitats within the park and the desire by the states of Montana and Wyoming to sustain these populations, mountain goats would likely continue to occupy these habitats and disperse into the park for the foreseeable future. Given these conditions, Yellowstone resource managers have no plans to remove mountain goats in the immediate future. Instead, they are working with state and university partners to evaluate potential impacts of mountain goats on native natural resources.

1. If the goats are translocated, where would they go?

   The precise locations of where goats would be transferred is not known at this time. The NPS would work closely with interested recipients and the Wyoming Game and Fish Department.

2. How can I participate in the process?

   The Draft Environmental Assessment, along with additional background information can be found at https://parkplanning.nps.gov/projectHome.cfm?projectId=47959

   Comments can be submitted electronically at that site, or may be submitted in writing at the public meeting listed below. Comments may also be mailed or hand-delivered to Superintendent, Grand Teton National Park, PO Box 170, Moose, WY 83012.

   Comments should be submitted no later than [insert date].

   A public open house will be held at [LOCATION] on [DAY]

3. How will removal operations impact Wilderness values in the park and adjacent national forest?

   Aerial and ground operations would most notably have short-term negative effects on wilderness solitude. Temporary area closures would have an effect on wilderness recreational opportunities. The removal of nonnative mountain goats from wilderness would have a long-term beneficial effect on the natural quality of wilderness (due to removal of a nonnative species). Because the goats live year-round within wilderness there is no way to conduct removals except in wilderness.

4. How will removal operations impact visitor access and recreation in the park and adjacent national forest?

   Temporary area closures during mountain goat removal activities could impact some backcountry and wilderness visitors within Grand Teton National Park. Removal operations would not impact visitors in adjacent national forest lands. To reduce these potential impacts, field activities in backcountry and wilderness areas would occur during periods of minimal visitation as much as possible, and would avoid trails, overlooks, backcountry camping zones, and climbing routes. Signs, alerts, bulletins, press releases, and notifications would be issued to inform visitors of temporary area closures and other management activities.

5. Does the plan consider area closures to protect bighorn sheep habitats?

   The mountain goat management plan is focused on the removal of mountain goats.

6. Why does the park not allow hunters to remove the goats?

   An alternative that involves public hunting within Grand Teton National Park as a tool to manage mountain goats would be inconsistent with existing law and regulatory authority regarding public hunts in National Parks. National Park Service federal regulations states hunting shall be allowed in park areas where such activity is specifically mandated by federal law. Although the 1950 law that created Grand Teton National Park allows for the controlled reduction of elk when necessary for proper management of the herd, public hunting is not authorized in this law.

   At this time there is no hunting of mountain goats within the parkway.

7. Are you considering using skilled volunteers to remove goats?

   The NPS is not considering the use of skilled volunteers to remove mountain goats. apid reduction of the park's mountain goat population is a critical step in reducing the risk of disease transmission and competition between mountain goats and bighorn sheep and improving the chances of sustaining the Teton Range bighorn sheep population. The mountain goat population is currently at a size where complete removal (as described in this plan) is achievable in a short time frame. The potential removal of the small number of goats that may repopulate the area would be better achieved utilizing skilled park staff and contractors. Thus, there would be little benefit in developing and managing a short-term ground-based skilled volunteer program to remove mountain goats.

8. If the plan is approved, when do you propose to begin implementation?

   If the plan is approved, implementation is anticipated to begin as early as late fall or early winter of 2018.

9. What will happen to the goats that are lethally removed?

   Mountain goat carcasses would generally be left on the landscape for scavengers to utilize or to decompose naturally. When possible, carcasses will be kept away from popular visitor-use areas such as trails and campsites. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

22. Why is the park considering lethal removal? Why can't all the goats be removed through live capture?

   Not all goats will be able to be captured - they may occur in areas of the park where the terrain is too challenging for safe capture or they may simply elude capture efforts. Given interest from outside parties and necessary approvals for translocations, it is estimated that approximately 25% of the goats will be live captured and translocated, but the remaining 75% will be removed by lethal means.

Kilpatrick - Wyoming Wild Sheep Foundation - M.pdf

PEPC Project ID: 47959, DocumentID: 90336
Correspondence: 183

Author Information

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Correspondence Information

Status:New	Park Correspondence Log:
Date Sent: Feb 14, 2019	Date Received: Feb 14, 2019
Number of Signatures: 1	Form Letter: No
Notes:	

Correspondence Text

Wyoming Wild Sheep Foundation
2/14/2019
Grand Teton National Park - Mountain Goat Management Plan
The Wyoming Wild Sheep Foundation (WY-WSF) would like to provide the following comments on GTNPs Mountain Goat Management Plan Environmental Assessment December, 2018.
The WY-WSF has historically been very active relative to conserving the bighorn sheep resource in the Teton Range. Our current Executive Director, Steve Kilpatrick, was one of the founders of the Teton Range Bighorn Sheep Working Group in the early 1990s and assisted with development/implementation of the herds strategic plan. Moreover, in a concerted effort to minimize the potential for pneumonia related pathogen transmission from domestic to wild sheep, a high priority identified in the strategic plan, WY-WSF worked with multiple domestic sheep permittees and the Caribou-Targhee NF (C-TNF) to retire all domestic sheep grazing allotments adjacent to GTNP and within the Teton Bighorn Sheep Herd Unit boundary. WY-WSF secured nearly a quarter million dollars to compensate domestic sheep grazing permittees and invested considerable time in this effort (2001-2004). Domestic sheep grazing no longer occurs on the C-TNF adjacent to GTNP and the potential for pathogen transmission between domestic and wild sheep and has been greatly minimized.
Subsequent to the domestic sheep allotment retirements, Wy-WSF has invested considerable funding resources and time in research, monitoring, captures, disease testing, outreach, etc. efforts for this bighorn sheep herd. Our total financial investment is near the half million mark and personnel time commitment is considerable. In addition, our outreach work with others has resulted in the Iowa Chapter of the Foundation of North American Wild Sheep (IFNAWS) adopting the Teton sheep herd for future project funding. IFNAWS granted $12,500 to GTNP in June, 2018 and has made the Teton Sheep a priority for funding in future years.
In short, WY-WSF has demonstrated, and will continue to demonstrate, our committed to the long-term conservation of this indigenous and imperiled bighorn sheep herd. Therefore, WY-WSF is supportive

of Alternative C - Combination of Lethal and Non-Lethal Removal (Preferred).
Rational for Support of Alternative C
Potential for Pneumonia related Pathogen Transmission: Recent genetic studies indicate mountain goats in the Teton Range have likely derived from the introduced Snake River Range in Idaho. That being the case, mountain goats moving from the Snake River Range to the Tetons have likely had direct and indirect contact with domestic sheep permitted to graze on the C-TNF within the Snake River Range. Domestic sheep commonly carry a host of pathogens which result in moderate die offs in mountain goats but catastrophic die offs in bighorns. Recent research from the Nevada East Humboldt and Ruby Mountain ranges documents pneumonia related pathogen transmission from mountain goats to wild sheep after mountain goats exposed to domestic sheep. Recent pathogen testing indicates that mountain goats from the Wyoming and Idaho populations in the Palisades/Snake River Range, just to the south of GTNP, are positive for the major pathogens associated with polymicrobial pneumonia die offs -LktA Bibersteinia trehalosi, LktA Mannheimia haemolytica/glucosida, LktA Mannheimia spp., Pasteurella multocida, Mycoplasma ovipneumoniae. More concerning, mountain goats within the Teton Range have recently tested positive for LktA Bibersteinia trehalosi and LktA Mannheimia spp. Equally concerning, bighorn sheep in the Tetons have tested positive for LktA Mannheimia haemolytica/glucosida, LktA Mannheimia spp. and Pasteurella multocida.
Recent and historic testing indicates the Teton bighorns are immunologically na ve to pneumonia-causing and other pathogens. The combination of an immunologically na ve population, low level of bighorn genetic diversity, occurrence of three of the five commonly known pneumonia pathogens causing all-age class bighorn die offs, documented commingling of mountain goats and bighorns, known transmission of lethal pneumonia pathogens from mountain goats to bighorns, high level of mountain goat recruitment, negative bighorn recruitment and the potential of quadrupling the mountain goat population (n = 400), leaves us with grave concerns for the immediate future of the Teton bighorns.
Recent consultation with individuals associated with the Western Association of Fish and Wildlife Agencies Wild Sheep Committee expressed similar concerns. In summary, there is no reason not to believe the potential currently exists for additional pathogen transmission and a corresponding bighorn sheep die off. Thus, we strongly recommend complete mountain goat removal using the most expeditious and effective tools available.
Habitat Competition and Degradation: Research documents the potential for overlap between the diets of the two species. Current habitat competition is probably minimal. However, given the considerable increase in mountain goat numbers in recent years and the model predictions of 400 mountain goats in the future, meaningful competition is highly likely to occur relatively soon. This small imperiled bighorn sheep herd can ill afford the added competition resulting from a robust and increasing non-native mountain goat herd. Thus, we recommend removal of the mountain goats to alleviate future habitat competition.
Non-lethal Removal of Mountain Goats: We are supportive of nonlethal removal and encourage NPS to work closely with appropriate state wildlife and federal land management agencies to coordinate logistics and find suitable relocation sites. It is estimated that captures would take place over a 3-5-year timeframe. Historic mountain goat captures in the Tetons have demonstrated a high level of resource investment per capture, ranging from 1-10 hours or more of flight time per animal. Two of the pathogens of concern were detected in 6 of 15 mountain goats captured in the Tetons from 2014-2018. Thus, a significant percentage of the captured mountain goats may not meet approval for translocation. In summary, captures will be expensive, stressful to individuals (especially those held long periods in capture facilities for disease testing etc.), and relatively ineffective in reducing mountain goat numbers quickly. This removal technique alone will not likely lessen the risk of pathogen transmission between the species over the short or long-term. Given the imminent threat of pathogen transmission, it is

imperative that the tools used for removal result in complete, or near-complete, mountain goat removal within 1-2 years.
Careful consideration must be given to translocation sites. Mountain goats are document to mover extensive distances over time. We need to be careful and not recreated the current situation with wondering mountain goats contacting domestic sheep and subsequently commingling and threatening an established bighorn sheep herd.
Use of Trained Volunteers for Lethal Removal: The use of trained volunteers for lethal removal is an option. The efficacy of this technique alone in significantly reducing mountain goat numbers is questionable given winter conditions and terrain challenges. Again, recent helicopter efforts per capture reflect the inaccessibility of the Teton mountain goats. Another issue is the ability of participants to retain animal parts. Congressional legislation enables participants in the Grand Teton National Park elk reduction program to retain carcasses. Congressional legislation does not exist for the recent Rocky Mountain National Park elk reduction program. Thus, participants are not allowed to retain animal parts. We view the mountain goat removal program as time-sensitive and are not supportive of congressional or other enabling legislation/regulation which would delay their removal. Olympic National Park will likely be using trained volunteers in 2020, in combination with translocations and contract lethal removal of mountain goats. It is yet unknown if volunteers will be able retain animal parts. Volunteers are usually accompanied by qualified Park Service personnel which may discourage some participants and increase overall costs.
In summary, the use of trained volunteers could be considered as a complimentary component to other techniques if it does not delay the mountain goat removal timeline of 1-2 years.
Summary
The WY-WSF has invested considerable resources in the conservation of the Teton bighorn sheep herd. We firmly believe that the exotic mountain goats pose a real and imminent threat to the future of this native and declining Teton bighorn sheep herd. Pneumonia pathogen transmission is the short-term an immediate concern. Habitat competition and the continued threat of pathogen transmission are the long-term threats. The Teton bighorn sheep are native and genetically unique - irreplaceable.
Given societys responsibility to conserve a native species from local extinction, and the historic resource investments in this herd by all, we encourage GTNP to implement Alternative C expeditiously using appropriate lethal and non-lethal techniques. That said, we are certainly supportive of mountain goats occupying locations like the Snake River and Absaroka ranges, where competition and disease issues do not pose an immediate threat.

_____ _____
Kurt Eisenach, President Steve Kilpatrick, Ex. Dr.

Schmid - Wyoming Game & Fish Commission - Moun.pdf

PEPC Project ID: 47959, DocumentID: 90336
Correspondence: 121

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Correspondence Information

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Date Sent: Dec 17, 2018	Date Received: Dec 17, 2018
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Notes:	

Correspondence Text

First, let me state that I understand GTNP policy to manage its native animals.If GTNP moves forward with lethal methods they should work with the Wyoming Game & Fish Dept. and open this up for a specific period of time for a select few hunters that are interested.
This issue did not happen overnight, these Mt. Goats have been encroaching on the GTNP for years. If the Park and Wyoming Game & Fish would have gotten together years ago there is high probability we would not be faced with this potential " Biological Disaster" as Park officials are calling it.

Wyoming has 3 hunt areas where the average citizen can apply for a " Once in a Lifetime" opportunity to hunt one of these Rocky Mountain Goats. Many people apply their entire lives and go to their grave never drawing one of these coveted tags. For the GTNP because of years of inaction removes the chance for these folks at an opportunity to take one of these Mt. Goats is just wrong.

Please remember it is through hunting license sales and donations to conservation groups such as the Wyoming Wild Sheep Foundation that these folks have covered the cost to manage these Mt. Goats over the years, they deserve this chance.

Wyoming Game & Fish beginning in 2019 will offer a " Type A " Mt. goat tag that will work very well to keep this expanding Goat herd out of the GTNP. This does nothing for the problem at hand, but will definitely help in future years. Hunters will be the folks that do the work....please, please, please give them the opportunity to help now. Again they deserve it!

Wyoming Department of Agriculture - Mountain G.pdf

Wyoming Department of Agriculture

Mark Gordon, *Governor*
Doug Miyamoto, *Director*
2219 Carey Ave. • Cheyenne, WY 82002
Phone: (307) 777-7321 • Fax: (307) 777-6593
Web: agriculture.wy.gov • Email: wda1@wyo.gov

The Wyoming Department of Agriculture is dedicated to the promotion and enhancement of Wyoming's agriculture, natural resources and quality of life.

January 24, 2019

Grand Teton National Park
Attn: Goat Management Plan
PO Box 170
Moose, WY 83012

RECEIVED
JAN 31 2019
GRTE
Superintendent's Office

To Whom it May Concern:

Following are the Wyoming Department of Agriculture (WDA) comments regarding National Park Service's (NPS) Grand Teton National Park Mountain Goat Management Plan (Plan) Environmental Assessment (EA).

Our comments are specific to our mission: dedication to the promotion and enhancement of Wyoming's agriculture, natural resources and quality of life. As the proposed project could affect our industry, citizens, and natural resources it is important that you continue to inform us of proposed actions and decisions and continue to provide the opportunity to communicate pertinent issues and concerns.

The WDA has worked closely with the Wyoming Governor's Office, Wyoming Game and Fish Department (WGFD), and the Wyoming State Veterinarian/Livestock Board on bighorn sheep management and conflict related issues over the last several years. NPS policy describes when exotic plant and animal species find their way into parks, *"Control or eradication will be undertaken, where feasible, if exotic species threaten or alter natural ecosystems; [or] seriously restrict, prey on, or compete with native populations* (NPS 1991 – Natural Resource Management Guideline)."

The Grand Teton National Park is wrought with non-native species impacting habitats and ecosystems, which include spotted knapweed, leafy spurge, houndstongue, thistles and others (brook trout, brown trout, rainbow trout), but yet the control and eradication of these species is largely ignored. More specifically, the WDA does not support the use of the risk of contact model being used in any management decisions regarding bighorn sheep management. The misapplication of this model has created significant impacts to livestock grazing producers and livestock grazing industry. It is now being used as the tip of the spear to remove an entire population of valued big game species. The precedence of this decision may be felt throughout Wyoming, its agriculture industry, as well as other states across the West.

The WDA is very concerned the NPS is setting a precedent by prematurely removing mountain goats in Western Wyoming. The EA analysis could indirectly impact the domestic sheep industry, and implies domestic sheep are passing on pathogens to mountain goats. Page 31 specifically states, *"The existing domestic sheep allotments overlap with mountain goat range and disease testing indicated that mountain goats from Wyoming and Idaho populations in the Snake River Range are positive for all the pathogens associated with polymicrobial pneumonia."*

This statement illustrates three erroneous assumptions by the NPS and thus improperly estimates impacts. First, the NPS assumes mountain goat ranges are clearly and defensibly identified. Second, those ranges directly correspond to

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domestic sheep allotment boundaries. Third, mountain goats are not only carrying pathogens, but are passing them on to other species.

The NPS has taken liberty to not only assume mountain goat ranges are identified and have direct overlap with domestic sheep allotments, but also based on limited testing of mountain goat, they are positive for ALL pathogens. Domestic sheep grazing has occurred on the landscape for over a century, yet according to the EA, the Teton Range bighorn sheep herd is "immunologically naïve" and have not been previously exposed to the pathogens.

Furthermore, on page 35, the EA concludes *"Retirement of domestic sheep allotments on the west side of the Teton Range have had a beneficial effect on the bighorn sheep by reducing the risk of contact and resulting pathogen transmission between domestic and bighorn sheep. However, domestic sheep grazing occurs on USFS lands in the Snake River Range directly south of the Teton Range and mountain goats there test positive for pneumonia-causing pathogens. The potential exists for mountain goats to disperse from the Snake River Range to the Teton Range. Although the likelihood of dispersal is unknown, it is likely related to population size: higher likelihood at higher population size. Although the risk of contact for new goats that disperse is unknown, the impacts of any contacts between mountain goats and bighorn sheep could be significant."*

First, the risk of contact is a model, not a scientific fact proven through verifiable observations. The risk of contact model simply identifies possible physical contact a bighorn sheep could make on a domestic sheep allotment. It does not definitively equate to nose-to-nose contact between domestics and bighorns, nor does it result in pathogen transmission as stated above.

Second, the EA takes liberty to now incorporate the risk of contact model and apply the model's concept and intent to mountain goats and bighorn sheep, by concluding in this analysis, direct contact between the two species will result in significant impacts. The risk of contact model in this case is now based on population increases of mountain goat and possibility of dispersal. To our alarm, this is not only a gross misapplication of the risk of contact model, but use by an agency not intended to use the model. The risk of contact model was developed by the US Forest Service (USFS), for USFS use, not by the NPS. We are also concerned the NPS is attempting to manage the State of Wyoming's wildlife, which is well outside of the NPS jurisdiction.

Finally, Figure 2: Observations of mountain goats in the Teton Range, 1977 – 2016 found on page 5 of the EA is misleading. If the mountain goats were introduced in Black Canyon and Palisades Creek, Idaho, there would have been observations of a substantially increasing population of mountain goats shifting from their original translocation sites, and working eastward toward Grand Teton National Park. However, page 3 states, *"Home Ranges are typically fixed throughout an adult's life and are larger for females than for males (Chadwisck 1983, Festa-Bianchet and Cote 2008)."* WDA also would point out; the observations between 1977 and 2014 were ocular only. It wasn't until 2014 when radio collars were placed on an unknown number of mountain goats (p. 3). This increase and possible shift in population could have been utilized by WGFD, as well as Wyoming guides, outfitters, and hunters for the highly sought after hunting tags.

Non-resident tags are $2162 each, not including the additional economic loss of guide fees, hotel, food, gas, and supplies to the local communities. Title 36 Section 2.2(b)(1) of the Code of Federal Regulation does allow hunting in park areas. The enacting legislation for Grand Teton National Park Act of 1950, Section 6(a) and (b) does allow elk hunting in conjunction with the National Elk Refuge and in conformance with 16 U.S.C. § 673c, Conservation of Elk in Wyoming. We would recommend the NPS review existing legislation for removing elk from Grand Teton National Park

and propose an amendment to include additional species, not limited just to mountain goat to address any other future management needs. An amendment to Grand Teton National Park using the National Environmental Policy Act will likely take an equal amount of time as the proposed EA, while still meeting the original purpose and need.

An additional component of the EA concerning the WDA is on page 37, *"Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-levels impacts are not anticipated. Reducing the mountain goat population is also expected to benefit the Teton Range bighorn sheep herd by eliminating a major population-level threat. Overall, the effects of Alternative B are expected to be substantial and beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for habitat and forage between bighorn sheep and mountain goats."*

We are unaware what "specific conservation measures" the NPS has implemented to benefit bighorn sheep. Again, wildlife is under the purview of the State of Wyoming, and the WGFD. The Statewide Bighorn Sheep Domestic Sheep Interaction Working Group Plan should be referenced regarding management of bighorns. Additionally, the NPS concludes in its analysis to ultimately remove all risk of pathogen transmission (and subsequent risk of a disease outbreak), yet, the EA neglects two more important points.

First, prior to the translocation of mountain goats in eastern Idaho, WDA questions if the mountain goats were tested for all pathogens prior to their release and insist the NPS consider the potential transmission between mountain goats and bighorns over the past 40 years. Butler, et al 2018 discusses population performance of bighorn sheep in Montana and Wyoming. On page, 14 it states: *"Our findings suggest a number of growing or robust populations that have been used as source populations for translocation may have harbored respiratory pathogens that were subsequently introduced to recipient populations or geographic regions, unbeknownst to wildlife managers."*[1]

Second, if mountain goats were carriers of pathogens, regardless of how they received it, and overlap of mountain goats and bighorns has occurred over the past 40 years, removing mountain goats does not *"ultimately remove all risk of pathogen transmission or subsequent risk of disease outbreak"* as stated, because the two species may have already interacted and possibly transmitted pathogens.

Butler et al. 2018 page 15 further states: *"The common detection of M. ovipneumoniae and Pasteurellaceae indicates that resident pathogens are a plausible explanation for some proportion of respiratory disease epizootics. Spontaneous respiratory disease epizootics have been previously reported in captive bighorn sheep and numerous epizootics in free-ranging bighorn sheep have been attributed to a shift in unfavorable ecological conditions that triggered increase virulence or transmission of resident pathogens. Epizootics in populations already hosting Pasteurellaceae and M. ovipneumoniae might be caused by introduction of novel pathogen strains or changes in the host, pathogens, or environment that lead to increased virulence or transmission of resident pathogens."*

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[1] Butler CJ, Edwards WH, Paterson JT, Proffitt KM, Jennings-Gaines JE, Killion HJ, et al. (2018) Respiratory pathogens and their association with population performance in Montana and Wyoming bighorn sheep populations. PLoS ONE 13(11): e0207780. https://doi.org/10.1371/journal.pone.0207780

In conclusion, we urge the NPS to rescind the current draft EA and instead amend the Grand Teton National Park Act to include removal of mountain goats in cooperation with the WGFD and in compliance with 16 U.S.C. § 673c, existing process for elk removal on NPS lands. The existing EA conveys an unwarranted sense of urgency, incorrectly uses the risk of contact model, and makes subjective assumptions regarding disease transmission. The WDA would like to work closely with the NPS on this particular analysis in the near future. If you have questions, please contact Justin Williams, Senior Policy Analyst at 307-777-7067.

Sincerely,

Doug Miyamoto
Director

DM/jw

CC: Governor's Policy Office
Wyoming Board of Agriculture
Wyoming Stock Growers Association
Wyoming Wool Growers Association
Wyoming Farm Bureau Federation
Wyoming State Grazing Board
Wyoming Association of Conservation Districts
Wyoming Game and Fish Department
Wyoming County Commissioners Association
Public Lands Council

Wyoming Game & Fish Department - Mountain Goat.pdf

WYOMING GAME AND FISH DEPARTMENT

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January 28, 2019

WER 13311.01
National Park Service
Grand Teton National Park
Mountain Goat Management Plan
Environmental Assessment

RECEIVED
FEB 06 2019
GRTE
Superintendent's Office

Grand Teton National Park
Planning & Environmental Compliance
P.O. Drawer 170
Moose, WY 83012

Dear Sir/Madam:

The staff of the Wyoming Game and Fish Department (Department) has reviewed the proposed Environmental Assessment (EA) for the Grand Teton National Park (GTNP) Mountain Goat Management Plan. We offer the following comments for your consideration.

While we appreciate the National Park Service's efforts to evaluate management alternatives to address the expansion of mountain goats in the Teton Range, we have some concerns regarding the analysis and management plan. The Department has been involved in this issue for some time through our participation in the Greater Yellowstone Mountain Ungulate Project and through the adoption of hunting season proposals to help control mountain goat expansion in Wyoming. Beginning this year, two new hunt areas have been designated and a new license type is proposed to facilitate mountain goat harvest on the Caribou-Targhee and Shoshone National Forests. Furthermore, the Department upholds the principles of the North American Wildlife Conservation Model in that wildlife is held in public trust and that there should be strict guidelines governing the killing of wildlife.

The Targhee bighorn sheep herd is a core native herd as categorized by the Wyoming Statewide Bighorn Sheep-Domestic Sheep Interaction Working Group and in Wyoming Statute 11-19-604. Core native herds are defined as those that have never been extirpated then reestablished through transplants, and are the highest priority bighorn sheep herds in Wyoming. Mountain goat herds in the Snake River Range and the Beartooth Mountains are also high priority, and the Department manages these herds to provide quality hunting and viewing opportunities.

The Department fully agrees with the EA's assessment that the expansion and proliferation of non-native mountain goats in the Teton Range poses a risk to the core native Targhee bighorn sheep herd. This risk comes from both competition for forage and space. We are particularly

concerned with regards to restricted, high elevation winter ranges used by bighorn sheep, and the potential transmission of respiratory pathogens from mountain goats to bighorn sheep. Because of these concerns, we support the goal of reducing the number of mountain goats in the Teton Range. The creation of Hunt Area 4 on the Caribou-Targhee National Forest adjacent to GTNP and the addition of Type A license is evidence of our commitment to this effort.

The Department does not support the Preferred Alternative as written. We recommend Alternative C be modified to include the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation and agency removals in select situations of known, suspected or likely contact between mountain goats and bighorn sheep. We recognize increased capture efforts may not be very successful, however we are willing to offer assistance in seeking additional funding to conduct capture operations, as well as facilitating and coordinating translocation efforts with potential recipients of GTNP mountain goats.

We believe the EA did not adequately explore the use of skilled volunteers to remove mountain goats. The Western Association of Fish and Wildlife Agencies adopted a resolution (see attached) supporting the use of licensed hunters to reduce ungulate populations in National Parks, and a review of Federal Regulations allowing hunting could be further evaluated in the EA. For example, Section 3 of the National Park Service Organic Act [39 Stat. 535] provides the Secretary of Interior "discretion for the destruction of such animals and of such plant life as may be detrimental to the use of any of said parks, monuments, or reservations" (see attached). The EA could also provide a summary of situations in which other parks have used hunters to remove wildlife, and clarify the statutory authority to allow elk hunting within GTNP by "deputized rangers". The deputized rangers are licensed by the Department and we offer that mountain goat Type A license holders also be deputized and allowed access as a means to remove mountain goats. Persons holding a Type A mountain goat license have applied for the opportunity to hunt mountain goats in steep and remote mountainous terrain adjacent to Grand Teton and Yellowstone National Parks. Skilled volunteers could provide many benefits, such as carcass removal, utilization of meat and hides, removing mountain goats in terrain or timber that is inaccessible to aerial captures, and potentially reduce the number animals requiring aerial removals.

This method could also be used at different times of the year in locations where bighorn - mountain goat interactions and potential pathogen transfer are more probable, such as at natural mineral licks. Removal by skilled volunteers may also be a more publically tolerable/acceptable method, compared with aerial lethal removal operations that leave carcasses on the landscape. We recognize the difficulties and constraints of conducting such an undertaking, and would like the opportunity to more fully explore specific details associated with this option with GTNP staff.

The Department lethally removes bighorn sheep in situations where pathogen transfer risks from domestic sheep and goats pose a substantial threat to bighorn populations. These measures are

taken when bighorn sheep wander into areas where there is known, suspected, or likely contact with domestic sheep or goats.

Applying this approach to the goal of minimizing the risk of pathogen transfer from mountain goats to bighorn sheep, could inform scenarios under which the Department would accept/support National Park Service lethal removal efforts. This would revolve around the issue of known, suspected, or likely contact between mountain goats and bighorn sheep. Known contact has been documented in Cascade Canyon, while areas of suspected or likely contact require more conjecture. Trail cameras have documented both bighorn sheep and mountain goat use of the same natural mineral lick within a narrow time span in Teton and Webb Canyons, while movement information gained from radio collared bighorn sheep and mountain goats have shown it is possible that contact between the two could occur almost anywhere in the Tetons where goats and sheep reside. This same radio collar information has shown overlap in mountain goat and bighorn sheep habitat use (Prospector's Mountain, Moran and Snowshoe Canyons), and although contact is suspected or likely, it has not been demonstrated.

Based on this type of evaluation, agency lethal removal could be targeted at mountain goats residing in delineated bighorn sheep winter ranges and documented areas/drainages of overlap based on radio collar and survey information. Such areas currently support less than 20% of the total number of goats seen during winter surveys, and perhaps total only 15-20 goats. Past surveys and information gathered from radio-collared individuals have documented the existence of two relatively distinct bighorn sheep sub-populations in the Tetons; one primarily south of Avalanche Canyon and one primarily north of Moran Canyon. Few sheep currently reside in the area between these sub-populations, although approximately 80% of GTNP mountain goats are found there. This current distribution may provide some opportunities to implement a sequential or zoned approach, therefore prioritizing different combinations of management actions in specific areas.

In closing, we appreciate the efforts of GTNP to address the shared issue of the expansion and proliferation of mountain goats and the risk this presents to the Targhee bighorn sheep herd. In summary, we would like to see capture and translocation efforts be considered, using skilled volunteers to the fullest extent possible and targeting agency removal to areas of known, suspected, or likely contact between mountain goats and bighorn sheep. We would also like to continue more detailed discussions with GTNP staff regarding the specifics of how, when, and where to employ each of these potential management actions.

Thank you for the opportunity to comment. If you have any questions or concerns please contact Brad Hovinga, Jackson Regional Wildlife Supervisor, at (307)-733-2321.

Sincerely,

Scott G. Smith
Deputy Director

SS/dm/db/ml

Enclosures:

1. Western Association of Fish and Wildlife Agencies: Resolution - Ungulate Management in National Parks
2. Act to Establish a National Park Service (Organic Act), 1916

cc: U.S. Fish and Wildlife Service
Brian Nesvik, Chief Game Warden, Wyoming Game and Fish Department
Doug Brimeyer, Deputy Chief of Wildlife, Wyoming Game and Fish Department
Brad Hovinga, Regional Wildlife Supervisor, Wyoming Game and Fish Department
Chris Wichmann, Wyoming Department of Agriculture

WESTERN ASSOCIATION OF FISH AND WILDLIFE AGENCIES

RESOLUTION

UNGULATE MANAGEMENT IN NATIONAL PARKS

WHEREAS, it is not uncommon for populations of protected or otherwise unmanaged populations of wildlife to become overabundant; and

WHEREAS, it is not uncommon for such overabundant populations to have a detrimental impact upon the habitat upon which they and other wildlife species rely; and

WHEREAS, research has shown that several features of ungulate herds in the absence of hunting fall outside the natural range of variation, such as density, the herd's overall size, and less migratory behavior; and

WHEREAS, research has shown, and wildlife professionals have acknowledged, that ungulate populations can have a negative impact on and degrade the plant communities that support them; and

WHEREAS, public hunters have historically and significantly helped wildlife agencies to not only restore declining wildlife populations, but to manage overabundant wildlife populations as well; and

WHEREAS, use of such public hunters would involve established wildlife management procedures and would significantly reduce the costs associated with the removal of excess ungulates; and

WHEREAS, such public hunters would utilize the harvested ungulates for consumption and alleviate the need for the National Park Service to plan and pay for the disposition of the removed animals.

NOW, THEREFORE, BE IT RESOLVED that the Western Association of Fish and Wildlife Agencies encourages wildlife agencies and their respective commissions or boards to promote the critical role that public hunters play in wildlife management within their state boundaries, and utilize hunters as a management tool wherever appropriate.

BE IT FURTHER RESOLVED that the Western Association of Fish and Wildlife Agencies supports the use of appropriately licensed public hunters to effect any necessary reduction in ungulate populations in national parks.

BE IT FURTHER RESOLVED that the Western Association of Fish and Wildlife Agencies encourages the involved wildlife agency to conduct special orientation sessions for selected public hunters that would include information about the role of ungulates and hunters in park ecosystems.

BE IT FURTHER RESOLVED that the Western Association of Fish and Wildlife Agencies encourages the National Park Service to seek whatever legislative or regulatory authority is required to support use of public hunters to reduce ungulate populations in national parks.

Adopted in Convention
Bismarck, North Dakota
July 26, 2006

ACT TO ESTABLISH A NATIONAL PARK SERVICE (ORGANIC ACT), 1916

AN ACT TO ESTABLISH A NATIONAL PARK SERVICE,
AND FOR OTHER PURPOSES,
Approved August 25, 1916 (39 Stat. 535)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby created in the Department of the Interior a service to be called the National Park Service, which shall be under the charge of a director, who shall be appointed by the Secretary and who shall receive a salary of $4,500 per annum. There shall also be appointed by the Secretary the following assistants and other employees at the salaries designated: One assistant director, at $2,500 per annum; one chief clerk, at $2,000 per annum; one draftsman, at $1,800 per annum; one messenger, at $600 per annum; and, in addition thereto, such other employees as the Secretary of the Interior shall deem necessary: *Provided,* That not more than $8,100 annually shall be expended for salaries of experts, assistants, and employees within the District of Columbia not herein specifically enumerated unless previously authorized by law. The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations. (U.S.C., title 16, sec. 1.)

SEC. 2. That the director shall, under the direction of the Secretary of the Interior, have the supervision, management, and control of the several national parks and national monuments which are now under the jurisdiction of the Department of the Interior, and of the Hot Springs Reservation in the State of Arkansas, and of such other national parks and reservations of like character as may be hereafter created by Congress: *Provided,* That in the supervision, management, and control of national monuments contiguous to national forests he Secretary of Agriculture may cooperate with said National Park Service to such extent as may be requested by the Secretary of the Interior (U.S.C., title 16, sec. 2.)

SEC. 3. That the Secretary of the Interior shall make and publish such rules and regulations as he may deem necessary or proper for he use and management of the parks, monuments, and reservations under the jurisdiction of the National Park Service, and any violations of any of the rules and regulations authorized by this Act shall be punished as provided for in section fifty of the Act entitled "An Act to codify and amend the penal laws of the United States," approved March fourth, nineteen hundred and nine, as amended by section six of the Act of June twenty-fifth, nineteen hundred and ten (Thirty-sixth United States Statutes at Large, page eight hundred and fifty-seven). He may also, upon terms and conditions to be fixed by him, sell or dispose of timber in those cases where in his judgment the cutting of such timber is required in order to control the attacks of insects or diseases or otherwise conserve the scenery or the natural or historic objects in any such park, monument, or reservation. He may also provide in his discretion for the destruction of such animals and of such plant life as may be detrimental to the use of any of said parks, monuments, or reservations. He may also grant privileges, leases, and permits for the use of land for the accommodation of visitors in the various parks, monuments, or other reservations herein provided for, but for periods not exceeding twenty years; and no natural curiosities, wonders, or objects of interest shall be leased, rented, or granted to anyone on such terms as to interfere with free access to them by the public: *Provided, however,* That the Secretary of the Interior may, under such rules and regulations and on such terms as he may prescribe, grant the privilege to graze live stock within any national park, monument, or reservation herein referred to when in his judgment such use is not detrimental to the primary purpose for which such park, monument, or reservation was created, except that this provision shall not apply to the Yellowstone National Park. (U.S.C., title 16, sec. 3.)

SEC. 4. That nothing in this Act contained shall affect or modify the provisions of the Act approved February fifteenth, nineteen hundred and one, entitled "An Act relating to rights of way through certain parks, reservations, and other public lands." (U.S.C., title 16, sec. 4.)

Fwd_ WAFWA followup and GRTE-related issues.pdf

From: Patrick Walsh
To: Gopaul Noojibail
Subject: Fwd: WAFWA followup and GRTE-related issues
Date: Friday, April 26, 2019 9:57:21 AM

Fyi

Sent from my Verizon, Samsung Galaxy smartphone

-------- Original message --------
From: "Wrigley, Mike" <mike_wrigley@nps.gov>
Date: 4/26/19 7:07 AM (GMT-07:00)
To: "Walsh, Patrick" <patrick_walsh@nps.gov>, Jeremy Sweat <jeremy_sweat@nps.gov>
Subject: Fwd: WAFWA followup and GRTE-related issues

Some more background info from last year re the topic. Pat, you may have been at DINO at the time (?)

Mike Wrigley
Wildlife Conservation Chief
Biological Resources Division | Natural Resource Stewardship and Science
National Park Service | 1201 Oakridge Dr. | Ft Collins, CO 80525
mike_wrigley@nps.gov | wk 970.225-3566 | cell 970.617.3253

---------- Forwarded message ---------
From: **Mike Wrigley** <mike_wrigley@nps.gov>
Date: Tue, Jul 24, 2018 at 8:34 PM
Subject: Fwd: WAFWA followup and GRTE-related issues
To: Malone Patrick <patrick_malone@nps.gov>
Cc: <kristen_philbrook@nps.gov>

Some additional perspective from one of the parks biologists

Mike Wrigley / Biological Resources Chief / IMR / National Park Service

Begin forwarded message:

> **From:** "Dewey, Sarah" <sarah_dewey@nps.gov>
> **Date:** July 24, 2018 at 7:14:04 PM MDT
> **To:** "Consolo-Murphy, Susan (Sue)" <sue_consolo-murphy@nps.gov>

Cc: David Gustine <dave_gustine@nps.gov>, Mike Wrigley <mike_wrigley@nps.gov>
Subject: Re: WAFWA followup and GRTE-related issues

Sue,

I don't think any of the items Mike brings up relative to the goat plan are a surprise. As Mike noted, Director Talbot was present at the WGF/WWSF Bighorn sheep summit at Burgess Junction in June 2017 when I gave a presentation on the status of Teton sheep and mountain goats. The presentation included a brief overview of the goat plan/alternatives under consideration. There was some discussion about a public hunt in the park and how that was not allowed under NPS policy. Several of our partners even chimed in saying suggesting that pursuing that angle would slow implementation down considerably. I believe the concept of skilled volunteers was also brought up, but not discussed at length. Locally, biologists and the regional supervisor are well versed on the sheep and goat issues and supportive of plan development. That said, I don't know where WGF as an agency will stand on some of the specifics. I think we can expect WGF to play their cards pretty close until they hear from their stakeholders on the goat plan.

My sense is that WGF personnel may not be fully aware of how skilled volunteers have been used in other NPS units to address overabundant native or exotic species. Consequently, I've tried to articulate that we shouldn't represent their lack of comment on this topic as no interest or desire to have this option on the table, but rather a lack of awareness that it's a possibility and how it might work. The comments about carcass disposition are also not surprising and in line with some comments from former WGF personnel I've heard through the grapevine. I think we have laid out a reasonable argument for leaving carcasses (safety, benefits to wildlife, minimize landings in wilderness, etc.), but we could be flexible on this issue.

As for goat numbers WGF may have the best data. During their helicopter count this spring they counted 66 goats. Accounting for missed animals, there may be closer to 100 goats. Happy to discuss any of this further if you would like.

Sarah

On Tue, Jul 24, 2018 at 1:55 PM, Consolo-Murphy, Susan (Sue) <sue_consolo-murphy@nps.gov> wrote:

> Ah...let Mike and I know your take on this, please. Thanks.
>
> Sue Consolo-Murphy
> Chief, Science & Resource Management
> Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
> P.O. Drawer 170
> Moose, WY 83012
> (307) 739-3481 (w)

(307) 690-8005 (cell)
Sue_Consolo-murphy@nps.gov

---------- Forwarded message ----------
From: **Malone, Patrick** <patrick_malone@nps.gov>
Date: Tue, Jul 24, 2018 at 10:56 AM
Subject: Fwd: WAFWA followup and GRTE-related issues
To: Raymond Vela <david_vela@nps.gov>, Gopaul Noojibail <gopaul_noojibail@nps.gov>, "Consolo-Murphy, Susan (Sue)" <sue_consolo-murphy@nps.gov>
Cc: Sue Masica <sue_masica@nps.gov>, "Katharine (Kate) Hammond" <kate_hammond@nps.gov>, Patrick Walsh <patrick_walsh@nps.gov>, Mike Wrigley <mike_wrigley@nps.gov>

Hi guys. Please see below for updates as it relates to info. we gleaned concerning GRTE at the recent WAFWA meeting. We recommend that you all reach out to WYGFD. We are here to help or facilitate if you desire.

Thanks.

Patrick Malone
Acting ARD for Resource Stewardship and Science (July-Oct. 2018)
(for Natural Resource assistance please contact Don Weeks at 303-987-6640)
Natural Resources Chief | Intermountain Region - *The Standard for Natural Resources Excellence* **National Park Service** |
12795 W Alameda Parkway, Lakewood, CO 80228 | 303.969.2415 office

Intermountain Region, Natural Resources Division Intranet Page is located here:
https://sites.google.com/a/nps.gov/imro-natural-resources/home

Resource Stewardship Advisory Team
NPS Intermountain Region
Enhancing park capacity for resource stewardship

---------- Forwarded message ----------
From: **Mike Wrigley** <mike_wrigley@nps.gov>
Date: Tue, Jul 17, 2018 at 5:08 PM
Subject: WAFWA followup and GRTE-related issues
To: Patrick Malone <patrick_malone@nps.gov>
Cc: Don Weeks <don_weeks@nps.gov>, Kristen Philbrook <kristen_philbrook@nps.gov>

Below are a 3 items that were topics of discussion during the WAFWA meeting in Eugene that concluded July 16, pertinent to GRTE. Park leadership may consider following up with WGFD (Director Scott Talbot or other senior staff) on the below important and current topics.

1) GRTE's mt goat removal plan - ran into Dir. Talbot WGFD in the hall and had a brief 2 min conversation to see if this was on his radar. He seemed a bit surprised by it. I later learned from the park that he had

been briefed by GRTE staff at a bighorn sheep meeting last year but may not have remembered that. He expressed some "concerns" or reactions of the following:
-The deposition of the mt goat carcasses (concern of waste of euthanized animals), no retrieval of animals and not going towards "traditional uses"
-They would advocate hunting as a proper and preferred removal method (is always their preferred method and use of the animal - most likely relates to previous bullet but he didn't elaborate)
-Concern of the number of goats that would be removed - I didn't have exact number of goats off the top of my head and estimated high (I spoke of up to 200 instead of a more accurate current number of 100) be removed
-He did not advocate or suggest the park implement or consider a "skilled volunteer" method but we only had a brief conversation

2) Private in-holding court decision - reaffirm the understanding and management moving forward regarding this most recent July 13, 2018 decision.

3) The Herrera case regarding tribal hunting rights in the western US which includes GRTE, YELL and others in which the US Supreme Court has agreed to hear this case (see background link). The states are very concerned about the ramifications to their wildlife management authorities and abilities if hunting could be allowed anywhere on "unclaimed" lands such as public/federal lands and how the Supreme Court might rule in this case. This ruling could have important potential hunting ramifications to several NPS units within several western tribal treaty areas.

I believe these are 3 important and relevant topics the park may want to consider discussing with WGFD directly. IMRO can participate or facilitate such a conversation if desired. I can elaborate on the above as needed.

Mike Wrigley
Biological Resources Chief
Intermountain Region | National Park Service | Lakewood, CO 80228
mike_wrigley@nps.gov | wk 303.969.2929 | cell 303.885.8769
IMRO - Natural Resources - Biological Resources - Home Page

FIND YOUR PARK

--

Sarah Dewey, Wildlife Biologist
Grand Teton National Park
Science and Resource Management
P.O. Box 170
Moose, WY 83012
(307) 739-3488

Fwd_ Info.pdf

From:	Gopaul Noojibail
To:	Raymond Vela
Subject:	Fwd: Info
Date:	Sunday, April 28, 2019 1:17:17 PM
Attachments:	ATT00001.htm Skilled volunteers talking points.docx

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Gopaul Noojibail
Acting Superintendent
Grand Teton National Park
John D. Rockefeller Memorial Parkway
(307) 739-3411

Begin forwarded message:

From: "Leslie, Elaine" <elaine_leslie@nps.gov>
Date: April 28, 2019 at 1:01:41 PM MDT
To: Gopaul Noojibail <gopaul_noojibail@nps.gov>
Cc: Patrick Walsh <patrick_walsh@nps.gov>, "Susan (Sue) Consolo-Murphy" <sue_consolo-murphy@nps.gov>
Subject: Info

Hi folks,

Here are some draft talking points which the Acting Director used at a recent meeting of the Hunting and Shooting Sports Council Meeting (attached). Also my notes on Sec Order 2410 from the meeting:

Sec 2410-Wildlife Management in parks-most of the discussion was had by Anna and Susan....they described the recent Council meeting and Acting Director participation. They said they were not happy with the answers provided in regards to the use of skilled volunteers. They want something much stronger. I had an opportunity to discuss that this is situational how volunteers are considered and utilized and it is ultimately up to the park superintendent. I said we certainly early on in the planning process encourage parks to consider the use of VIPs, where appropriate, but that a superintendent must consider safety first and foremost (visiting public, staff, VIPs.etc) along with a host of other issues. I said it is also not always the most cost effective or efficient use of resources and we are obligated to consider that as well. I reminded them that there are 76 units where hunting is authorized. They did a lot of focus on east coast parks and I told them that those were the parks where we have the most concern about public safety and that one incident could shut down the whole program and that also, since white tail deer are abundant on a wide geographic scale...not all states or public are always interested in the opportunity. I also reminded them that the NPS donates thousands of pounds of meat to shelters and elsewhere. They basically are going back to the Department to get stronger language...they want it out of the hands of the superintendents authority...they want a "thou shalt" strong directive to consider the use of VIPS for every situation.

They also discussed GRTE and OLYM as opportunities for volunteers.

See here:

https://www.doi.gov/pressreleases/secretary-zinke-announces-members-hunting-and-shooting-sports-conservation-council

Elaine F. Leslie
Chief, Biological Resources
Natural Resource Stewardship and Science
National Park Service
970 267-2135

Skilled volunteers talking points_1.pdf

Talking Points Hunting and Shooting Sports Conservation Council Meeting
NPS Use of Skilled Volunteers

Thank you for the opportunity to meet with the Council about this important topic. I'm looking forward to an engaging discussion on how we can continue to work together to raise awareness within parks and assist with implementation of the full suite ungulate management tools.

I am in receipt of the October 18, 2018, letter that you sent to Secretary Zinke requesting that a policy be developed that would require the use of skilled volunteers when the National Park Service needs to manage overabundant ungulates.

The National Park Service (NPS) has several tools available for directly managing both native and non-native ungulates to meet resource management objectives in parks including hunting (where authorized) or culling performed by NPS employees, contractors, skilled volunteers, and/or a combination of the above.

Tools are selected through a NEPA process based on the type of park unit, location, resource issue, conditions at the park, funding, public input, logistics, and other concerns such as safety.

One of primary distinctions between these tools and a traditional hunting program is that these actions are predicated solely on management of a park specific resource.

Because conditions on the ground may vary, it is important that Superintendents have the discretion to select the most appropriate tools for their management needs. Parks are, however, strongly encouraged to consider the use of skilled volunteers early in their management planning. This does not guarantee that this tool will be selected, but it is considered.

The NPS has made sure parks are aware of the need to use skilled volunteers through direct communications with national level advisory groups, regional staff, and individual parks who are undertaking management actions. In addition, a detailed guidance document regarding the use of skilled volunteers is available.

In many cases, when a park selects a preferred alternative for managing ungulates, that preferred alternative includes several of the available tools to provide maximum flexibility for park managers.

For example, the recent deer management plan that was approved at Fire Island National Seashore allows the park to use NPS employees, contractors, and/or skilled volunteers. The ability to use contractors meant that the NPS was able to shoot deer in the short window that remained this year after the injunction was lifted.

Because of the mission of the NPS, we are nearly always sued when we initiate an ungulate reduction plan.

The general authority we are using for culling is the Organic Act provision in 54 U.S.C. §100752 (Destruction of animals and plant life) which provides that "the Secretary may provide for the destruction of such animals and plant life as may be detrimental to the use of any System unit."

While we also generally take the position that NPS's broader conservation mandate (54 USC 100101) alone can also authorize culling for conservation purposes, that argument is harder to make at parks that have "no killing" language in their enabling statutes (like Rocky Mountain National Park).

In the opinion for the case at Rocky Mountain National Park, the court upheld the NPS decision to use skilled volunteers based on the efforts of the NPS to ensure that the elk reduction activity was a cull and not a hunt. The court found that:

> *The more plausible distinction between hunting and management killing is the one advanced by the NPS: namely, that the difference between permissible management killing, or culling, and impermissible hunting is that the latter is the recreational pursuit of game for meat and sport, with incidental management effects on game populations, while the former is the closely supervised killing of game to control its population.*

The NPS must be thoughtful when using skilled volunteers to ensure that the program developed is consistent with a culling activity and not hunting and provides volunteer safety and animal welfare.

Parks contract with APHIS-Wildlife Services (WS) to conduct culling activities as the mission of WS is to provide Federal leadership in managing problems caused by wildlife.

Recently finalized ungulate management plans that include skilled volunteers as a tool include:

- Fire Island National Seashore – deer management
- Chesapeake and Ohio Canal and Harpers Ferry National Historical Parks – deer management
- Grand Canyon National Park – bison

Q&A

When did the NPS start using skilled volunteers?

(b) (5)

[redacted]

The Record of Decision for the elk management plan at Rocky Mountain National Park was approved in 2008. This plan called for the use of skilled volunteers to manage overabundant elk.

The Record of Decision for the elk management plan at Theodore Roosevelt National Park was approved in 2010. This plan called for the use of skilled volunteers to reduce overabundant elk.

(b) (5)

[redacted]

The NPS began urging parks to consider the use of skilled volunteers for ungulate management after the programs at ROMO and THRO.

How does the NPS define hunting and culling?
In the Rocky Mountain National Park elk management plan and EIS, hunting and culling were defined as stated below. These definitions were reviewed and upheld in court.

Hunting is a recreational activity that includes the elements of fair chase and personal take of the meat, as well as being a conservation tool. Hunting is administered by the state fish and game agency, which licenses hunters. If areas of the park were to be opened to hunting those areas would need to be closed to visitor use while hunting was taking place. The NPS would need to absorb the costs of managing hunters, visitors and media during a hunt.

Culling is used as a conservation tool to reduce populations that have exceeded the carrying capacity of their habitat. As opposed to hunting, culling is done under very controlled circumstances in order to minimize impacts on park operations, visitors, private inholdings and neighbors. Culling is also an efficient and humane way to reduce herds of animals that are habituated to the presence of humans. Culling is not recreational and does not incorporate the concept of fair chase. Culling would be administered by the NPS and carried out by NPS personnel and their authorized agents, and would not require licensing by the state. The personnel doing the shooting would be responsible for killing and processing several animals in any session. Carcasses from culling operations would be tested for chronic wasting disease and to the extent possible carcasses and/or meat would be donated through an organized program to eligible recipients, including members of tribes, based on informed consent and pursuant to applicable public health guidelines. Short-term road closures (a few hours most likely early in the morning) could be needed while culling activity is ongoing.

Why did the NPS decide to not use skilled volunteers at Manassas, Monocacy, and Antietam? (Question from Susan R.)
Many places surrounding Antietam, Monocacy, and Manassas are occupied by residential development and commercial land uses, and regional highways go through all three parks. There were safety concerns related to this proximity of park boundaries to developed areas, high visitation in the parks, and topography/landscapes that inhibit clear lines of sight and complete closure of access. Based on all these factors, the NPS decided against the use of volunteers for assistance with lethal removal activities for these parks.

(b) (5)
[redacted]

What new authority does the John D. Dingell, Jr. Conservation, Management, and Recreation Act give the NPS?
The new law does not give us any new authority but rather reinforces our existing authorities to use skilled volunteers to cull wildlife.

The John D. Dingell, Jr. Conservation, Management, and Recreation Act (S.47) was signed into law on March 12, 2019 (PL 116-9)

SEC. 2410. WILDLIFE MANAGEMENT IN PARKS.

(a) IN GENERAL.—Chapter 1049 of title 54, United States Code (as amended by section 2409(a)), is amended by adding at the end the following:

§ 104909. Wildlife management in parks

(a) Use Of Qualified Volunteers.—If the Secretary determines it is necessary to reduce the size of a wildlife population on System land in accordance with applicable law (including regulations), the Secretary may use qualified volunteers to assist in carrying out wildlife management on System land.

(b) Requirements For Qualified Volunteers.—Qualified volunteers providing assistance under subsection (a) shall be subject to—

(1) any training requirements or qualifications established by the Secretary; and

(2) any other terms and conditions that the Secretary may require.

(c) Donations.—The Secretary may authorize the donation and distribution of meat from wildlife management activities carried out under this section, including the donation and distribution to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and such terms and conditions as the Secretary may require.".

(b) Clerical Amendment.—The table of sections for chapter 1049 of title 54 (as amended by section 2409(b)), United States Code, is amended by inserting after the item relating to section 104908 the following:

"104909. Wildlife management in parks.".

Specific questions from Jeff Crane:

*Obviously **Grand Canyon bison** is a big issue that has caught the attention of Congress. Seems like volunteers are likely, but NPS needs to make sure that it continues beyond the initial cull.*

- The plan at Grand Canyon National Park considers the use skilled volunteers, tribal personnel, and qualified federal personnel to cull bison and has worked closely with the State of Arizona to identify areas of collaboration and cooperation.

***Great Sand Dunes NP** has an ongoing ungulate management planning process underway and is considering volunteers to take care of an elk herd that is way over objective. This should be the alternative of choice.*

- The Great Sand Dunes (GRSA) plan is currently under development.
- For internal use only because the FEIS has not been released - The preferred alternative would use a combination of tools to manage elk including working with Colorado Parks and Wildlife and skilled volunteers to lethally remove elk, non-lethal hazing, and fencing of sensitive resources. In addition, GRSA would continue recreational public elk hunting on the preserve.

*The eastern battlefield parks like **Gettysburg, Monocacy, Valley Forge**, and others all contract with either private contractors or Wildlife Services to reduce and maintain white-tailed deer populations. At least in some of the more rural parks the public could be engaged in reducing overpopulations.*

- The majority of parks in the east are using contractors and/or qualified federal personnel.
- Chesapeake and Ohio Canal and Harpers Ferry National Historical Parks will be using NPS employees or authorized agents including skilled volunteers.
- Skilled volunteers may be used in the Southeast Region to manage feral pigs.

*There are rumors that **Olympic** is going to use volunteers to clean up small remaining populations of mountain goats after they trap and transplant and do some lethal removal. They have a good staff and have been reasonable and supportive of this.*

- The OLYM goat management plan calls for the capture and relocation of the goats, followed by lethal removal using NPS or other federal personnel, state personnel, or skilled volunteers where appropriate.

***Big Bend** was going to try and get rid of mouflons, barbary sheep etc and the public could certainly help.*

- Big Bend National Park completed an Exotic Animal Management Plan in 2018 for feral hogs and Barbary sheep. Control methods include capture and humane killing (primary method for feral hogs), aerial shooting, ground-based shooting using park staff, cooperating agencies, or contractors, and Judas animals. One reason skilled volunteers were not selected was the terrain/remote areas where the sheep are. There is a new superintendent at the park who has managed hunting and skilled volunteer activities in previous assignments. He may be open to re-considering the use of skilled volunteers for these culling activities.

How many parks are open for hunting?

There are **76** NPS units that are authorized for some form of recreational public hunting or subsistence or tribal hunting.

This includes:

- **64** "*shall hunt*" units open to recreational hunting, where hunting is mandated in the park's enabling legislation; this includes Valles Caldera National Preserve and Katahdin Woods and Waters National Monument, two recently added units to the NPS.
- **4** "*may hunt*" units where hunting is authorized, but is not mandated in the park's enabling legislation. Of these, 2 are currently open to hunting and 2 are not currently open to hunting.
- **7** units in Alaska that are authorized only for subsistence hunting via the Alaska Interest Lands Conservation Act (ANILCA).
- **1** NPS unit, Badlands National Park, which allows hunting only by the Oglala Sioux Tribe on some Tribal/Park lands.

Wildlife Removal Skilled Volunteers Decision Do....pdf

From:	Noon, Daniel
To:	Susan (Sue) Consolo-Murphy
Subject:	Wildlife Removal Skilled Volunteers Decision Document Examples
Date:	Thursday, May 9, 2019 11:23:56 AM
Attachments:	Use of Skilled Volunteers Decision Document Examples from Other Parks.docx

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Hi Sue,

Attached is selected text from a few decision document examples for the removal of wildlife using skilled volunteers. The Grand Canyon example has the greatest detail. It includes language on hunting (with a Grand Teton mention), carcasses, and meat donation.

Please let me know if you need additional information.

Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

Use of Skilled Volunteers Decision Document E.pdf

Olympic National Park Mountain Goat Management Plan Final Environmental Impact Statement Record of Decision (2018)

Lethal Removal

The timing and duration of the initial management phase under alternative C [lethal removal] would be 3 to 5 years, with most activity occurring in years 1 to 3. Lethal removals would be conducted only if necessary in years 4 and 5. In an effort to reduce the use of helicopters for lethal removal, management would start with ground-based activities, using skilled public volunteers and park staff in year 1. Helicopter-based operations would occur within the same 2-week management periods as described for alternative B, and ground-based lethal removal would take place opportunistically at any time during the year as needed.

Lethal removal of mountain goats will involve using shotguns and high-powered rifles. Ammunition will be non-toxic. Personnel involved, which could include NPS or other federal personnel, state personnel, or skilled public volunteers, will have the appropriate skills and proficiencies in the use of firearms to maximize public safety, including experience in the use of firearms for the removal of wildlife.

Grand Canyon National Park Initial Bison Herd Reduction Environmental Assessment Finding of No Significant Impact (2017)

Selected Alternative

Lethal Culling Methods

Before assisting with lethal culling actions, all team members will need to meet a number of predetermined requirements, including a demonstrated level of firearm proficiency and knowledge of public safety and protection policies that will be established by the park in consultation with the [Arizona Game and Fish Department (AGFD)]. Pre-reduction training will be required to prepare staff and volunteers for their roles; and to help them identify sensitive cultural and natural resources (e.g., archeological resources, cultural landscapes, rare plants etc.) and actions that can be taken to avoid disturbing these resources.

Carcass Handling and Disposition

The National Park Service will make every reasonable effort, when safe, to remove salvageable meat from the field for beneficial human use and will donate it, as appropriate, to the state of Arizona, volunteers who participated in lethal culling and removal of carcasses from the field, food banks, and tribal members. Other bison parts (e.g., hides, heads, horns) will be either donated to tribal partners, and/or federal or state agencies or cooperators for non-commercial uses (e.g., tribal ceremonial uses, public or educational display, research); and/or they will be left in the field to recycle into the environment. Organ and gut piles will also be left in the field to recycle into the environment.

Human Safety
The National Park Service will ensure a safety program is in place to minimize risk to staff, cooperators, volunteers, contractors and visitors from lethal or nonlethal culling activities or other elements of the selected alternative. Staff and cooperator training would address safety, and standard NPS practices would be followed to ensure the safety of all involved with bison reduction actions. Team members conducting the lethal and nonlethal culling activities must have experience with the shooting, capture, and handling of large mammals. Portions of the park in which lethal culling or corralling take place would be closed to visitors to ensure their safety. Details regarding these closures, such as announcing closures, mechanics of closures, and staffing, would be determined in the annual operations plan, and they would be announced in advance.

Alternatives Concept: Lethal Culling

Concern 13: Multiple commenters asked NPS to clarify the structure of the culling teams, including the number of people for carcass processing per culling team, who might be used, and how skilled volunteers would be identified/selected.

Response: As described on pages 23 to 25 of the EA, each lethal culling team that uses volunteers will consist of one NPS team leader and up to four volunteers. Team leaders will make all removal decisions regarding location and age/sex of individual bison to be removed during each lethal culling period. The role of the other team members will be determined during pre-reduction training that will be required. In addition, up to five additional people could accompany each of the four non-NPS team members (i.e., up to 20 additional people) to assist with carcass processing and removal. Other agency personnel and contractors could also be used to cull bison in limited circumstances.

Skilled volunteers will be members of the public, and along with tribal members who also participate, will meet a number of predetermined requirements, including a demonstrated level of firearm proficiency and knowledge of public safety and protection policies established. The EA does not describe how volunteers will be identified/selected, because there is no potential for environmental effects from these actions. However, the park anticipates working with AGFD and other partners to establish a lottery for a controlled number of skilled volunteers to assist with the culling effort; and will announce more details in advance of any lethal culling activities.

Concern 16: Commenters expressed multiple opinions about using professionals rather than skilled volunteers to cull the herd. One commenter indicated that it would be preferable for the park to use professionals because otherwise there would be too many "hunters" in the park. Other commenters noted that that using professionals would be a waste of financial resources.

Response: The park anticipates establishing a lottery for a controlled number of volunteers to assist with the culling effort. The number of culling teams operating at any one time is described on page 25 of the EA. All lethal culling will be supervised by NPS

staff and performed only by individuals who satisfy rigorous marksmanship and safety requirements to be developed by the park in collaboration with AGFD. This is quite different than hunting, and as described on page 35 of the EA, will be a non-recreational conservation tool that will be very controlled and structured. Despite potential costs, the park feels it is important to retain the option to use agency personnel/contractors if determined necessary.

Alternatives Concept: Hunting in the Park

Concern 20: Many commenters advocated allowing AGFD to manage public hunting in the park, consistent with the North American Model of Wildlife Conservation and its recommended use of hunting to manage wildlife populations. Some of these volunteers indicated that other park units use hunting for elk (Grand Teton National Park) and deer (Chincoteague and Assateague National Seashore), and that a large number of national park system acreage legally allows hunting, so it should be allowed at Grand Canyon National Park, possibly by amending the enabling legislation. Another co1nmenter stated that Congress had recently passed legislation to allow depredation hunting on national park lands and noted that Yellowstone National Park allows hunts. Other commenters questioned the rationale for dismissing public hunting in the park. One commenter asserted that the rationale for dismissing hunting in the park is arbitrary and capricious and violates NEPA. The commenter further noted that public hunting could be authorized if NPS is willing to request it Another commenter noted that eliminating hunting as an option simply because it is prohibited under current NPS/Department of the Interior rules and regulations is short-sighted and seems like an easy way to dismiss a cost-effective management tool that is, at its essence, the same as "lethal culling."

Response: Although the use of skilled volunteers to assist with lethal culling was retained in the preferred alternative, the use of skilled volunteers does not constitute hunting because lethal culling of bison is a non-recreational conservation tool used to reduce and control wildlife populations that have exceeded management objectives and have detrimental impacts on park resources. A detailed discussion of the reasons for dismissal is included in "Chapter 2: Alternatives Considered but Dismissed from Detailed Analysis" on page 35 of the EA. Longstanding NPS regulations (36 CFR 2.2(b)) and policy prohibit hunting except in specific units where it is expressly authorized by federal statute. Grand Canyon National Park is not such a unit. While there are a number of NPS units that allow hunting (including Assateague Island National Seashore), none of them use public hunting as a substitute for culling or other management actions that may be necessary. Hunting is not allowed at Grand Teton National Park, but pursuant to special statutory authority, it allows state-licensed hunters to participate in controlled elk reductions in coordination with the state of Wyoming. These suggestions, therefore, would not meet the purpose and need of this plan and are beyond the scope of the EA.

Alternatives Concept: Carcass Disposal

Concern 30: Commenters provided feedback regarding distribution of the bison meat. Some commenters proposed that skilled volunteers should receive an equitable portion of the meat and others suggested that all or a po1tion of it be given to food banks or tribes; some commenters stated that it should be sold locally. Some commenters indicated that bison hides and skulls or entire carcass should be given to the individual who culls the bison from the park or that NPS should sell the hides and skulls to collect revenue to pay for future bison management.

Response: As stated on page 25 of the EA, NPS will donate salvageable meat to the teams of volunteers who participated in lethal culling and removing carcasses from the field, food banks, and designated tribal members. In terms of the disposition of hides and skulls, please see the response to concern 21. Although NPS likely has the authority to sell bison meat or parts, sale could present additional logistical hurdles. In any event, whether NPS sells or donates meat or parts is not relevant to environmental impacts and does not require detailed discussion or resolution in the EA. At this time, NPS plans to donate all salvageable meat and bison parts.

Rocky Mountain National Park Final Environmental Impact Statement Elk and Vegetation Management Plan Record of Decision (2008)

Selected Action

The selected alternative is also responsive to public comment received on the draft plan/EIS by taking a gradual approach to lethal reduction that reduces costs, and will afford qualified volunteers the opportunity to assist in culling operations under the direct supervision of NPS personnel if needed based on cost, efficiency and effectiveness.

Elk Population Reduction

Culling will be administered by the National Park Service and carried out by National Park Service personnel and their authorized agents. For purposes of this plan, “authorized agents” can include: professional staff from other federal, state or local agencies or tribes; contractors; or qualified volunteers. National Park Service personnel will be responsible for culling operations. There may be circumstances when additional personnel are needed to achieve annual population goals. National Park Service personnel will be augmented by authorized agents who will be afforded the opportunity to assist in culling operations under the direct supervision of NPS personnel. Cost, efficiency, and effectiveness will be the factors that determine when supplemental personnel are needed. If contractors are used as authorized agents, in addition to other federal contracting requirements, for implementing this plan, a contractor is recognized as a fully insured business entity, nonprofit group, or other government agency engaged in wildlife management activities that include trapping, immobilization chemical

euthanasia, or other lethal removal. The contractor must possess all necessary permits.

Fwd_ Wildlife Removal Skilled Volunteers Decisi....pdf

From:	Consolo-Murphy, Susan (Sue)
To:	David Gustine
Subject:	Fwd: Wildlife Removal Skilled Volunteers Decision Document Examples
Date:	Thursday, May 9, 2019 5:24:01 PM
Attachments:	Use of Skilled Volunteers Decision Document Examples from Other Parks.docx

---

FYI as we consider how to craft our proposal.

Sue Consolo-Murphy
Chief, Science & Resource Management
Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
P.O. Drawer 170
Moose, WY 83012
(307) 739-3481 (w)
(307) 690-8005 (cell)
Sue_Consolo-murphy@nps.gov

---------- Forwarded message ---------
From: **Noon, Daniel** <daniel_noon@nps.gov>
Date: Thu, May 9, 2019 at 11:23 AM
Subject: Wildlife Removal Skilled Volunteers Decision Document Examples
To: Susan (Sue) Consolo-Murphy <sue_consolo-murphy@nps.gov>

Hi Sue,

Attached is selected text from a few decision document examples for the removal of wildlife using skilled volunteers. The Grand Canyon example has the greatest detail. It includes language on hunting (with a Grand Teton mention), carcasses, and meat donation.

Please let me know if you need additional information.

Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

Use of Skilled Volunteers Decision Document E_1.pdf

Olympic National Park Mountain Goat Management Plan Final Environmental Impact Statement Record of Decision (2018)

Lethal Removal

The timing and duration of the initial management phase under alternative C [lethal removal] would be 3 to 5 years, with most activity occurring in years 1 to 3. Lethal removals would be conducted only if necessary in years 4 and 5. In an effort to reduce the use of helicopters for lethal removal, management would start with ground-based activities, using skilled public volunteers and park staff in year 1. Helicopter-based operations would occur within the same 2-week management periods as described for alternative B, and ground-based lethal removal would take place opportunistically at any time during the year as needed.

Lethal removal of mountain goats will involve using shotguns and high-powered rifles. Ammunition will be non-toxic. Personnel involved, which could include NPS or other federal personnel, state personnel, or skilled public volunteers, will have the appropriate skills and proficiencies in the use of firearms to maximize public safety, including experience in the use of firearms for the removal of wildlife.

Grand Canyon National Park Initial Bison Herd Reduction Environmental Assessment Finding of No Significant Impact (2017)

Selected Alternative

Lethal Culling Methods

Before assisting with lethal culling actions, all team members will need to meet a number of predetermined requirements, including a demonstrated level of firearm proficiency and knowledge of public safety and protection policies that will be established by the park in consultation with the [Arizona Game and Fish Department (AGFD)]. Pre-reduction training will be required to prepare staff and volunteers for their roles; and to help them identify sensitive cultural and natural resources (e.g., archeological resources, cultural landscapes, rare plants etc.) and actions that can be taken to avoid disturbing these resources.

Carcass Handling and Disposition

The National Park Service will make every reasonable effort, when safe, to remove salvageable meat from the field for beneficial human use and will donate it, as appropriate, to the state of Arizona, volunteers who participated in lethal culling and removal of carcasses from the field, food banks, and tribal members. Other bison parts (e.g., hides, heads, horns) will be either donated to tribal partners, and/or federal or state agencies or cooperators for non-commercial uses (e.g., tribal ceremonial uses, public or educational display, research); and/or they will be left in the field to recycle into the environment. Organ and gut piles will also be left in the field to recycle into the environment.

Human Safety
The National Park Service will ensure a safety program is in place to minimize risk to staff, cooperators, volunteers, contractors and visitors from lethal or nonlethal culling activities or other elements of the selected alternative. Staff and cooperator training would address safety, and standard NPS practices would be followed to ensure the safety of all involved with bison reduction actions. Team members conducting the lethal and nonlethal culling activities must have experience with the shooting, capture, and handling of large mammals. Portions of the park in which lethal culling or corralling take place would be closed to visitors to ensure their safety. Details regarding these closures, such as announcing closures, mechanics of closures, and staffing, would be determined in the annual operations plan, and they would be announced in advance.

Alternatives Concept: Lethal Culling

Concern 13: Multiple commenters asked NPS to clarify the structure of the culling teams, including the number of people for carcass processing per culling team, who might be used, and how skilled volunteers would be identified/selected.

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Re_ Deliberative_ Draft components of possible ...(1).pdf

From:	Gustine, David
To:	Consolo-Murphy, Susan (Sue)
Cc:	Sarah Dewey
Subject:	Re: Deliberative: Draft components of possible skilled volunteer program at GRTE for management of mountain goats - Invitation to edit
Date:	Friday, June 14, 2019 12:41:08 PM

Copy Sue.

I'll get going on this on Tues, and touch base with Sarah mid week on lingering info. needs.

dave

On Fri, Jun 14, 2019 at 11:42 AM Consolo-Murphy, Susan (Sue) <sue_consolo-murphy@nps.gov> wrote:

> Hi, I know I commented a while back but let this go (too long) and Daniel's been asking me for language he can use in the FONSI. This is a really good start. Please look at my latest comments and any others you have and I hope we can wrap up the concept draft by end of next week to present to Vickie and Gopaul for review. A map would be helpful, showing goat sightings/distribution and proposed areas for skilled volunteers. It might also help to show adjacent national forests IF there's goat hunting areas adjacent to the park. We could also have Simeon layer backcountry trails and campsites to relate to talk about day and overnight user numbers as I want to be prepared to answer those questions--and any others you expect to get from the state or other folks. Thanks.
>
> Sue
>
> Sue Consolo-Murphy
> Chief, Science & Resource Management
> Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
> P.O. Drawer 170
> Moose, WY 83012
> (307) 739-3481 (w)
> (307) 690-8005 (cell)
> Sue_Consolo-murphy@nps.gov

On Wed, May 22, 2019 at 3:04 PM Sarah Dewey (via Google Docs) <drive-shares-noreply@google.com> wrote:

> sarah_dewey@nps.gov has invited you to **edit** the following document:
>
> Deliberative: Draft components of possible skilled volunteer program at GRTE for management of mountain goats

Open in Docs

Google Docs: Create and edit documents online.
Google LLC, 1600 Amphitheatre Parkway, Mountain View, CA 94043, USA
You have received this email because someone shared a document with you from Google Docs.

--

Dave Gustine, PhD
Supervisory Wildlife Biologist
Grand Teton National Park
Moose, WY 83012
dave_gustine@nps.gov
307-739-3485

Re_ Deliberative_ Draft components of possible ....pdf

From:	Dewey, Sarah
To:	Gustine, David
Cc:	Consolo-Murphy, Susan (Sue)
Subject:	Re: Deliberative: Draft components of possible skilled volunteer program at GRTE for management of mountain goats - Invitation to edit
Date:	Friday, June 14, 2019 1:50:42 PM
Attachments:	Cascade.pdf SV Overview.pdf

Here a first attempt at figures. Let me know if you'd like any edits. Thanks.

Sarah

On Fri, Jun 14, 2019 at 12:41 PM Gustine, David <dave_gustine@nps.gov> wrote:

> Copy Sue.
>
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>
> dave
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Google Docs: Create and edit documents online.
Google LLC, 1600 Amphitheatre Parkway, Mountain View, CA 94043, USA
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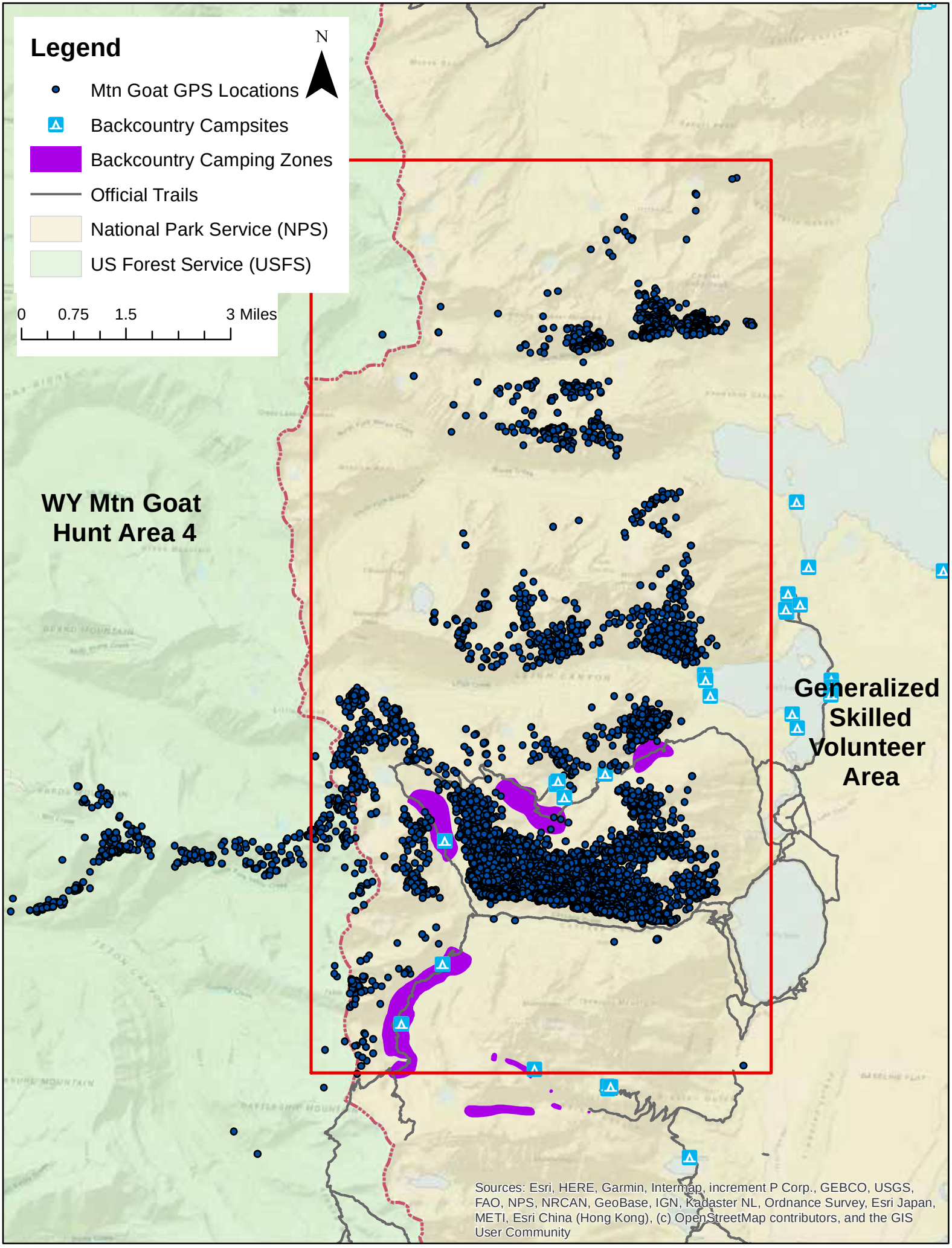
--

Dave Gustine, PhD
Supervisory Wildlife Biologist
Grand Teton National Park
Moose, WY 83012
dave_gustine@nps.gov
307-739-3485

--

Sarah Dewey, Wildlife Biologist
Grand Teton National Park
Science and Resource Management
P.O. Box 170
Moose, WY 83012
(307) 739-3488

Cascade.pdf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Mtn Goat GPS Locations
Backcountry Campsites
Backcountry Camping Zones
Official Trails
National Park Service (NPS)
US Forest Service (USFS)
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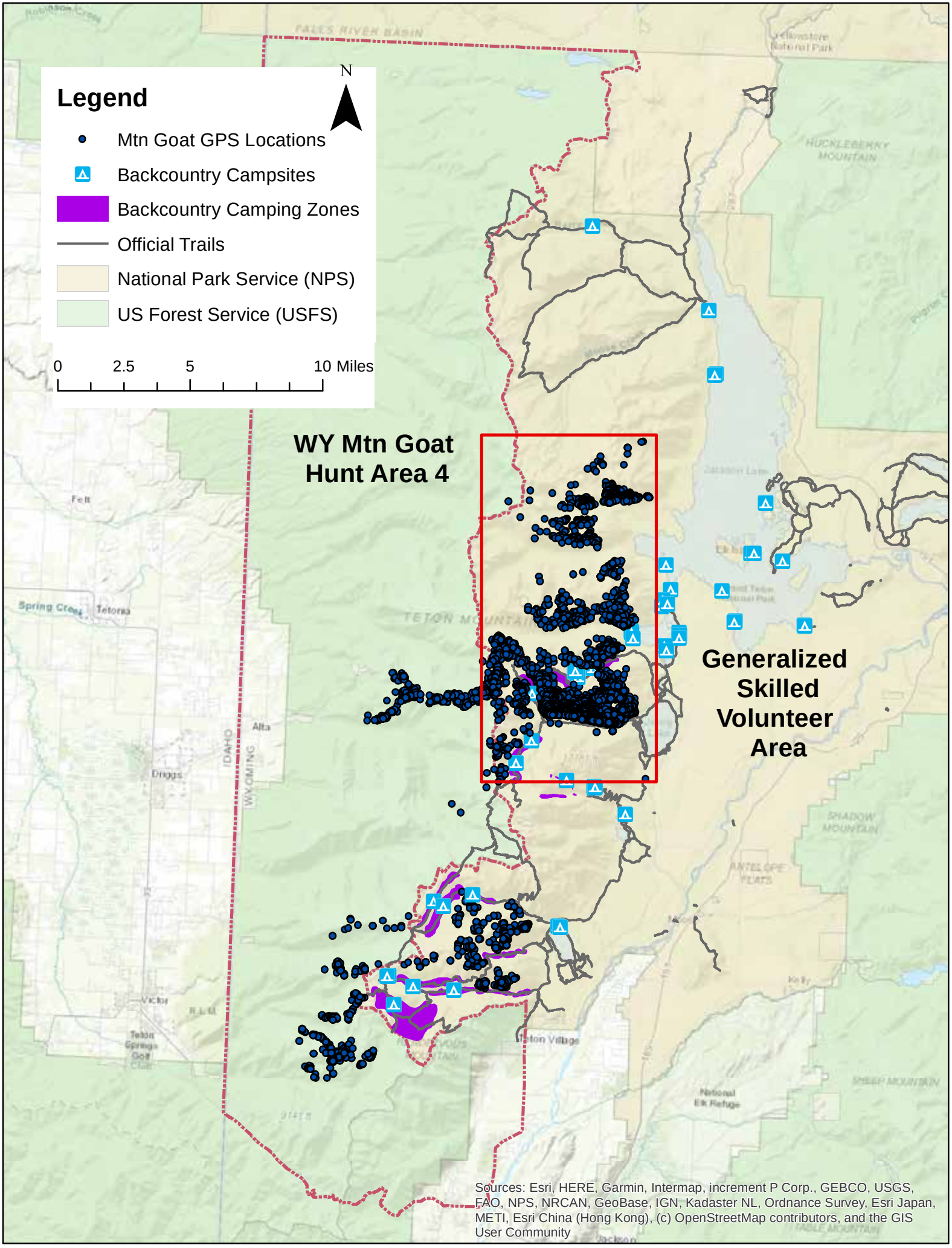
1.5
3 Miles
WY Mtn Goat Hunt Area 4
Generalized Skilled Volunteer Area
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

SV Overview.pdf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mountain goat plan.pdf

From:	Consolo-Murphy, Susan (Sue)
To:	Gopaul Noojibail; Victoria Mates; William Noon; Michael Nash; Germann, Denise
Cc:	David Gustine
Subject:	mountain goat plan
Date:	Wednesday, June 26, 2019 1:18:50 PM
Attachments:	REVISED DRAFT Briefing Statement, Mountain Goat Management Plan,June 2019.docx

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Attached is a link to the draft deliberative document on how skilled volunteers might be used to help remove mountain goats from the park.

https://docs.google.com/document/d/1hgIU4JLNXxzbAHCqJBjwbExC5Kxgsof6nynR3rS2TOs/edit?usp=sharing

Also attached is a revised draft briefing statement on the proposed plan, as we discussed at our June 18 meeting. Comments are welcome on both of these. Thanks.

Sue Consolo-Murphy
Chief, Science & Resource Management
Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
P.O. Drawer 170
Moose, WY 83012
(307) 739-3481 (w)
(307) 690-8005 (cell)
Sue_Consolo-murphy@nps.gov

REVISED DRAFT Briefing Statement, Mountain Go_5.pdf

Briefing Statement - Grand Teton National Park
Bureau: NPS
Issue: Mountain Goat Management Plan
Date: REVISED DRAFT June 2019

Key Points:

- Non-native mountain goats are increasing in Grand Teton NP (GRTE) and the John D. Rockefeller, Jr. Memorial Parkway (JODR), and threaten the small and declining native bighorn sheep herd and other animal and plant resources in the Teton Range.
- The NPS is developing a management plan to remove or significantly reduce the mountain goats in the next one to five years, which could be controversial. It includes the use of aerial control and potentially use of skilled volunteers to lethally remove mountain goats from the park.

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development. In recent years, sheep have declined to less than 100 animals.
- Mountain goats were first seen in the Teton Range in 1979 but only in recent years have biologists documented evidence of a rapidly increasing breeding population. Without intervention, scientists predict that the goat population could grow to 2.5-5 times current numbers. Goats now likely outnumber the small native Teton bighorn sheep population.
- Mountain goats could introduce diseases to the native Teton bighorn herd. Goats in other ecosystems have also caused the decline or extirpation of native high-elevation plant populations.

Current Status:

- The NPS prepared a draft mountain goat management plan/EA that outlined strategies to significantly reduce or remove mountain goats from the Tetons, using NPS staff and skilled contractors, primarily through lethal means. Translocations of goats back into native ranges would be an option. Biologists believe that removal of this goat population can be done one to five years if prompt action is taken.

- Goats are widely dispersed in high-elevation backcountry areas of the park and seldom seen by park visitors. Their potential removal would be logistically challenging and may become controversial; however, there is high interest among state and federal biologists and local constituents in conserving the native bighorn sheep herd in the Teton Range.

- Idaho and Wyoming maintain goats as a game species in other areas. The park received requests from the Wyoming Game & Fish Commission and Department and some members of the public to consider using skilled volunteers to assist in goat removal. This has been added as a management option.

Interested Parties:

- Governor of Wyoming; local communities; Wyoming congressional delegation. WY Game &Fish Department and Commission; Idaho Department of Fish and Game; Yellowstone NP, the Bridger-Teton and Caribou-Targhee National Forests; sportsmen's groups; Jackson Hole Conservation Alliance, NPCA, Greater Yellowstone Coalition and other environmental groups; Jackson and Teton County; regional Native American Indian tribes.

Contact:

- Gopaul Noojibail, Acting Superintendent, 307-739-3410

Re_ mountain goat plan(3).pdf

From:	Noon, Daniel
To:	Consolo-Murphy, Susan (Sue)
Cc:	Gopaul Noojibail; Victoria Mates; Michael Nash; Germann, Denise; David Gustine
Subject:	Re: mountain goat plan
Date:	Tuesday, July 2, 2019 3:22:07 PM

Hello Sue,

I reviewed the attached briefing statement. I only have one edit: remove "draft" from the first bullet in the "Current Status" section.

I'll provide comments to the proposed skilled volunteer program document in Google docs.

Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

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> (307) 690-8005 (cell)
> Sue_Consolo-murphy@nps.gov

Re_ mountain goat plan(2).pdf

From: Noojibail, Gopaul
To: Noon, Daniel
Cc: Consolo-Murphy, Susan (Sue); Victoria Mates; Michael Nash; Germann, Denise; David Gustine
Subject: Re: mountain goat plan
Date: Monday, July 8, 2019 9:51:03 AM
Attachments: REVISED DRAFT Briefing Statement, Mountain Goat Management Plan.June 2019 GPN.docx

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(b) (5) [redacted].

(b) (5) [redacted]

Thanks

Gopaul Noojibail
Acting Superintendent
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
307.739.3411

On Tue, Jul 2, 2019 at 3:22 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

> Hello Sue,
>
> I reviewed the attached briefing statement. I only have one edit: remove "draft" from the first bullet in the "Current Status" section.
>
> I'll provide comments to the proposed skilled volunteer program document in Google docs.
>
> Thanks!
>
> Daniel Noon
> Chief of Planning and Environmental Compliance
> Grand Teton National Park
> John D. Rockefeller, Jr. Memorial Parkway
> (307) 739-3465
> Email: daniel_noon@nps.gov
>
> On Wed, Jun 26, 2019 at 1:18 PM Consolo-Murphy, Susan (Sue) <sue_consolo-murphy@nps.gov> wrote:
>
>> Attached is a link to the draft deliberative document on how skilled volunteers might be used to help remove mountain goats from the park.
>>
>> https://docs.google.com/document/d/1hgIU4JLNXxzbAHCqJBjwbExC5Kxgsof6nynR3rS2TOs/edit?usp=sharing
>>
>> Also attached is a revised draft briefing statement on the proposed plan, as we discussed at our June 18 meeting. Comments are welcome on both of these. Thanks.
>>
>> Sue Consolo-Murphy
>> Chief, Science & Resource Management
>> Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
>> P.O. Drawer 170
>> Moose, WY 83012
>> (307) 739-3481 (w)
>> (307) 690-8005 (cell)
>> Sue_Consolo-murphy@nps.gov

REVISED DRAFT Briefing Statement, Mountain Go_6.pdf

Briefing Statement July 2019

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton NP (GRTE) and the John D. Rockefeller, Jr. Memorial Parkway (JODR), and threaten the small and declining native bighorn sheep herd and other animal and plant resources in the Teton Range.
- The NPS is developing a management plan to remove or significantly reduce the mountain goats in the next one to five years, which could be controversial. It includes the use of aerial control and potentially use of skilled volunteers to lethally remove mountain goats from the park.

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development. In recent years, sheep have declined to less than 100 animals.
- Mountain goats were first seen in the Teton Range in 1979 but only in recent years have biologists documented evidence of a rapidly increasing breeding population. Without intervention, scientists predict that the goat population could grow to 2.5-5 times current numbers. Goats now likely outnumber the small native Teton bighorn sheep population.
- Mountain goats could introduce diseases to the native Teton bighorn herd. Goats in other ecosystems have also caused the decline or extirpation of native high-elevation plant populations.

Current Status:

- The NPS prepared a draft mountain goat management plan/EA that outlined strategies to significantly reduce or remove mountain goats from the Tetons, using NPS staff and skilled contractors, primarily through lethal means. Translocations of goats back into native ranges would be an option. Biologists believe that removal of this goat population can be done one to five years if prompt action is taken.
- Goats are widely dispersed in high-elevation backcountry areas of the park and seldom seen by park visitors. Their potential removal would be logistically challenging and may become controversial; however, there is high interest among state and federal biologists and local constituents in conserving the native bighorn sheep herd in the Teton Range.
- Idaho and Wyoming maintain goats as a game species in other areas. The park received requests from the Wyoming Game & Fish Commission and Department and some members of the public to consider using skilled volunteers to assist in goat removal. This has been added as a management option.

Interested Parties:

- Governor of Wyoming; local communities; Wyoming congressional delegation. WY Game &Fish Department and Commission; Idaho Department of Fish and Game; Yellowstone NP, the Bridger-Teton and Caribou-Targhee National Forests; sportsmen's groups; Jackson Hole Conservation Alliance, NPCA, Greater Yellowstone Coalition and other environmental groups; Jackson and Teton County; regional Native American Indian tribes.

Contact: Gopaul Noojibail, Acting Superintendent, 307-739-3410

Re_ mountain goat plan(1).pdf

From: Mates, Victoria (Vickie)
To: Noojibail, Gopaul
Cc: Noon, Daniel; Consolo-Murphy, Susan (Sue); Michael Nash; Germann, Denise; David Gustine
Subject: Re: mountain goat plan
Date: Tuesday, July 9, 2019 3:38:13 PM

Thanks Sue,

I have read the briefing statement and do not have any additions to what Daniel and Gopaul have provided.

Vickie Mates
Acting Deputy Superintendent
Grand Teton National Park
Box 170
Moose, WY 83012
(307) 739-3430 (office)
(307) 690-1825 (mobile)

On Mon, Jul 8, 2019 at 9:51 AM Noojibail, Gopaul <gopaul_noojibail@nps.gov> wrote:

(b) (5) [redacted]

[redacted]

Thanks

Gopaul Noojibail
Acting Superintendent
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
307.739.3411

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Daniel Noon
Chief of Planning and Environmental Compliance
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John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

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Sue Consolo-Murphy
Chief, Science & Resource Management
Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
P.O. Drawer 170
Moose, WY 83012
(307) 739-3481 (w)
(307) 690-8005 (cell)
Sue_Consolo-murphy@nps.gov

Re_ Please prep and route mountain BA and lette....pdf

From:	Consolo-Murphy, Susan (Sue)
To:	Gustine, David
Cc:	Justin Haug; Sarah Dewey; Noon, Daniel
Subject:	Re: Please prep and route mountain BA and letter for signature and mailing
Date:	Friday, July 12, 2019 5:58:06 PM
Attachments:	DRAFT_GRTE_MOGO_BA_cover_letter_7.9.19.docx FINAL MOGO plan BA 7.9.2019.docx

---

If these have not already been sent, please finalize on Monday for supt's signature, thanks.

Sue Consolo-Murphy
Chief, Science & Resource Management
Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
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(307) 690-8005 (cell)
Sue_Consolo-murphy@nps.gov

On Tue, Jul 9, 2019 at 3:27 PM Gustine, David <dave_gustine@nps.gov> wrote:

> Justin-
>
> The biological assessment (BA) for the Mountain Goat Management Plan is complete and ready for mailing to the USFWS. We've prepared a cover letter that needs to be routed to Sup's office and signed prior to mailing the BA. Both documents are here:
>
> P:\Planning Office\Mtn Goat Management Plan EA\BA
>
> Sarah contacted the USFWS today in regard to this BA.
>
> thanks,
>
> dave
>
> --
>
> Dave Gustine, PhD
> Supervisory Wildlife Biologist
> Grand Teton National Park
> Moose, WY 83012
> dave_gustine@nps.gov
> 307-739-3485

DRAFT_GRTE_MOGO_BA_cover_letter_7.9.19.pdf

United States Department of the Interior

NATIONAL PARK SERVICE
GRAND TETON NATIONAL PARK
P.O. BOX 170
MOOSE, WY 83012-0170

IN REPLY REFER TO:

1.D(GRTE)

Tyler Abbott, Field Supervisor
USFWS Ecological Services Wyoming Field Office
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

Re: Request for Informal Section 7 Consultation on the *Mountain Goat Management Plan* for Grand Teton National Park

Dear Mr. Abbott:

Please see our determination of effects regarding federally listed species as contained in the enclosed Biological Assessment (BA) for the proposed *Mountain Goat Management Plan for Grand Teton National Park* in Teton County, Wyoming. The National Park Service requests initiation of formal consultation with you in accordance with Section 7 of the 1973 Endangered Species Act, as amended.

We have determined that the proposed action in this plan "*may affect, is not likely to adversely affect*" the Canada lynx (*Lynx canadensis*) and grizzly bear (*Ursus arctos*), and is "*not likely to jeopardize*" the North American wolverine (*Gulo gulo*).

We appreciate your thorough review and assistance in this consultation process as we are committed to the conservation of federally listed species occurring in Grand Teton National Park and the John D. Rockefeller, Jr. Memorial Parkway. If you have questions, please contact Sarah Dewey, Wildlife Biologist, at 307-739-3488 or Dave Gustine, Supervisory Wildlife Biologist, at 307-739-3485.

Sincerely,

Gopaul Noojibail
Acting Superintendent
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway

Enclosure: Biological Assessment

cc: Chief, Science and Resource Management
Chief, Planning
Branch Chief, Cultural Resources
Branch Chief, Fish and Wildlife

FINAL MOGO plan BA 7.9.2019.pdf

MOUNTAIN GOAT MANAGEMENT PLAN
BIOLOGICAL ASSESSMENT

Grand Teton National Park and the John D. Rockefeller, Jr. Memorial Parkway
July 2019

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1.0 Introduction

The Endangered Species Act (ESA) of 1973 (PL 93-205, as amended) requires federal agencies to ensure that any activities they authorize, fund, or carry out do not jeopardize the continued existence of any wildlife species federally listed, or proposed for listing, as threatened or endangered (Section 7). This document addresses all threatened, endangered, or proposed (TEP) terrestrial wildlife, vascular plant, and fish species identified by the U.S. Fish and Wildlife Service (USFWS) as potentially occurring within Grand Teton National Park or the John D. Rockefeller, Jr. Memorial Parkway (hereafter referred to as the park or GRTE-JODR). This biological assessment is the analytical basis for determining the level of impact or environmental consequence for wildlife and wildlife habitat, including threatened and endangered species, in the EA.

1.1 Purpose of this Biological Assessment

This Biological Assessment (BA) analyzes the potential effects of implementing one of three alternatives to manage nonnative mountain goats within the park on TEP and critical habitat, pursuant to Section 7 of the Endangered Species Act of 1973 (16 U. S. C. 1531-1544), as amended. Federally listed threatened and endangered species and critical habitat meeting the following criteria are considered in this assessment:

1. Known to occur in the park based on confirmed sightings;
2. May occur in the park based on known range or unconfirmed sightings;
3. Potential habitat for the species occurs within the park; or
4. Potential effects may occur to these species.

1.2 Current Management Direction

Current management direction for TEP species can be found in the following documents:

- Endangered Species Act of 1973, as amended
- 1916 Organic Act
- National Park Service (NPS) General Authorities Act
- NPS Management Policies 2006
- Migratory Bird Treaty Act

2.0 Consultation History

The park obtained a current species listed (dated June 29, 2019) from the Information Planning and Conservation (IPac) website. In addition, in April 2017 NPS wildlife biologist, Sarah Dewey, sought input from USFWS biologist Lisa Solberg-Schwab regarding helicopter disturbance to raptors. The information provided was used to develop conservation measures and assess potential impacts.

3.0 Proposed Management Action and Alternatives Considered

The NPS is evaluating three alternative strategies for managing mountain goats within the park. These include a no action alternative, where there would be no change to current management, and two action alternatives that evaluate different removal techniques (lethal only and a combination of lethal and non-lethal). This BA analyses the potential impacts of Alternative C, the preferred alternative, which would use a combination of lethal and non-lethal techniques to remove mountain goats from the park. A full

description of Alternative C can be found in the Environmental Assessment (EA) beginning on page 17. In short, Alternative C would implement active population management of exotic mountain goats, using a combination of lethal and non-lethal actions to remove the goats from the park. During the first few years of active management, actions would be divided between live capture and translocation and lethal removal of mountain goats. The management options for lethal removal are the same as those described under alternative B. Aircraft-based operations would occur ≤40 days, including ≤17 days of fixed-wing monitoring or capture support, ≤3 helicopter survey days, ≤5 helicopter-based capture days, ≤5 days of helicopter-based lethal removal, and ≤10 days of live capture for translocation (Table 1). If funding allows, ≤10 additional days (2 removal periods) of lethal removal could occur.

In response to comments received on the EA, the NPS has re-considered an element of Alternative C that would include the use of skilled public volunteers to assist with lethal removal action. The following paragraph can replace paragraph 2 under item 3 of the **Elements Common to the Action Alternatives (B and C)** heading on page 22 of the EA.

> Given the steep, inaccessible terrain where mountain goats reside it is likely that a significant portion of the removal work would involve aviation operations, although some work may occur from the ground. Ground-based removals may be necessary to complete removal of mountain goats, and these efforts could include federal staff (i.e., NPS staff, Wildlife Services staff), other approved and qualified government employees or contract personnel, or skilled public volunteers.

In addition the following updated description of the use of skilled public volunteers can be inserted after the above paragraph.

> Management of ungulate populations has become a challenge in many national park units and recently some units have used public volunteers to assist with lethal removal operations (Powers et al. 2016). NPS staff would develop a process to recruit and select volunteers and a program to integrate volunteers into the lethal removal process. The details of both the recruitment process and the structure of a program using volunteers are still yet to be developed, however, the credentials of participants would include:
>
> - Clear criminal record with no fish/wildlife associated violations
> - Sufficient physical fitness to carry heavy pack in variable terrain
> - Demonstrated experience hunting ungulates in mountainous terrain
> - Demonstrated experience with backcountry travel and navigation
> - State-issued hunter safety certification or its equivalent
>
> Selected participants would need to meet the following requirements:
>
> - Attend 1-day in-park training/orientation on:
> - Safety: travel/hunting in high country/bear country, communications, essential equipment, use of bear spray, emergency response
> - Animal identification: age and sex of mountain goats, and sheep versus goats
> - Sample collection
> - Interfacing with other users
> - Pass test of 1) marksmanship and 2) ability to identify age, sex, and species of target versus non-target native animals.

3.1 Conservation Measures to Reduce or Avoid Potential Impacts

The following conservation measures specific to TEP species will be implemented (see EA page 22 for a complete list of Conservation Measures):

Wildlife

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture would occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored throughout the season and appropriate measures (e.g. removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Personnel involved in helicopter- and ground-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November-April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If an actual or potential den location is found or suspected either through aerial survey or collar data, an appropriate disturbance-free buffer will be established around the den. Focal helicopter activities, such as those associated with aerial removal of mountain goats, will occur between mid-December and mid-February to specifically reduce potential impacts to denning grizzly bears.
- All activities will comply with the park's Superintendent's Compendium (2019 and as updated) regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear-resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
    - In all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and

windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.

- All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office (307-739-3673) will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.
- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately (307-739-3301). All bear sightings must be reported to the park's Bear Management Office (307-739-3673) in ≤24 hours.

- See also conservation measures listed below under *Acoustic Environment* in EA.

Skilled Volunteer Program

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry (Table 1).
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)
- Volunteers will ensure carcass or gut piles are >100 yards from trails, campsites, camping zones, cabins, etc. If this is not practical, skilled volunteers will report the location of any remains to NPS so a temporary closure can be implemented.

Table 1. Summary of actions in Alternative C.

Action	Element	Purpose	Operational Window	Target[1]	Duration (days)	Frequency
Monitoring	Telemetry/observation fixed-wing flights	Monitor distribution, movement, demographics, and abundance, and support live-capture operations	Year-round	None	Monitoring/capture support: ≤12 flight days total; support for translocations: ≤5	As needed to support capture or monitoring efforts
	Camera traps	Population estimate	Year-round	None	Year-round in some locations; May-Oct. in others	Annually
	Helicopter survey	Population estimate	Dec-Mar	None	1-3 flight days	Annually with bighorn sheep survey
	Ground surveys	Population estimate	May-Oct	None	≤2 weeks	Annually
Live capture	Capture, radio collar, and release	Aid monitoring/disease testing	Nov-Mar	5-10 goats	2-5 days	As needed to facilitate management and monitoring and as funding allows
	Translocation	Population reduction	Nov-Feb or at other times of year as necessary	≤25% of existing population	5-10 days	Consider annually during population reduction when interest warrants and funding allows
Lethal Removal	Nuisance individuals	Reduce safety threat	Year-round	Targeted individual(s)	≤1 flight day/individual	As needed
	Aerial removal	Population reduction	Dec-Feb[2] or other times of year as necessary	75%	Alt B and C: ≤5 flight days per management period, but weather dependent	Annually during population reduction
	Live capture and euthanize/ dispatch	Population reduction	Year-round	TBD	TBD	As needed

Table 1. Summary of actions in Alternative C.

Action	Element	Purpose	Operational Window	Target[1]	Duration (days)	Frequency
	Ground removal	Population reduction	Year-round by park staff or contractors	≤ 10% over duration of plan	Up to several days per goat	Consider annually during population reduction; as needed in perpetuity at low levels
	Skilled Volunteers	Population Reduction	Oct-Nov 2020 (additional efforts if needed)		Up to several days per goat	≤6 weeks at ≤6 volunteers/week
Other Actions	Hazing	Reduce safety threat	Year-round	Targeted individual(s)	Several hours to several days	As needed in perpetuity
	Information/ Education/ Outreach	Reduce safety threat from rogue goat; inform public about mountain goat plan/management actions	Year-round	Affected publics	Duration of project	As needed but likely limited
	Area closures	Carcass management; reduce safety threat from rogue goats; human safety near active staging and management areas	Year-round	None	During lethal and non-lethal removal activities	As needed

[1]Target is defined as desired outcome.
[2]Timing of aerial removal was modified from EA as Conservation Measure to reduce potential impacts to grizzly bears.

4.0 Project Area Description

The project area is located within GRTE-JODR in Teton County in northwest Wyoming (Figure 1). The Teton Range rises from the Jackson Hole valley floor at approximately 6,500 feet to a high of 13,770 feet atop the Grand Teton. Vegetation communities vary across an elevational gradient (Knight et al. 2014) and include the elevation band of 7,500-11,000 feet throughout much of GRTE-JODR, which includes over 80% of the plant taxa within this elevation range. The GRTE 2002–2005 Vegetation Mapping Project Final Report (Cogan et al. 2005) and its appendices describe a total of 167 plant associations, while the accompanying map is divided more coarsely into 35 vegetation types, 24 of which occur in the project area. These vegetation zones and types are described by the following:

- **Alpine vegetation** – True alpine vegetation communities occur in the park above 9,000 feet and

are at least sparsely vegetated. These areas are intermixed with numerous non-vegetated cliffs and rock faces, boulder fields, and snowfields.

- **Treeline vegetation** – Treeline vegetation (9,500-10,000 feet) is characterized by a mosaic of alpine vegetation and/or sub-alpine vegetation, and krummholz trees. These "trees" generally reach 3-4 feet in height with the occasional emergent trunk reaching higher. High wind, low temperatures and moisture, and poor soil development characterize the treeline and alpine areas. Dominant tree species include Englemann spruce (*Picea engelmanii*), subalpine fir (*Abies lasiocarpa*), and whitebark pine (*Pinus albicaulus*).
- **Sub-alpine mixed conifer forest** – Sub-alpine forests are prevalent (7,000-9,500 feet). These forests can be dominated by one or several tree species, which include lodgepole pine (*Pinus contorta*), Engelmann spruce, subalpine fir, and white bark pine.
- **Sub-alpine and montane shrubland** – Montane and sub-alpine shrublands (7,000-9,000 feet) are generally located on slopes and in drainages. Species co-occur in both the montane and subalpine zones.

5.0 Pre-field Review

A species list from the IPaC website (dated 6/29/2019) with all federally listed and candidate species within GRTE-JODR in Teton County Wyoming was reviewed for this analysis (Table 2). Species not known or with no potential to occur in the analysis area were dismissed from further consideration in this document (Table 2).

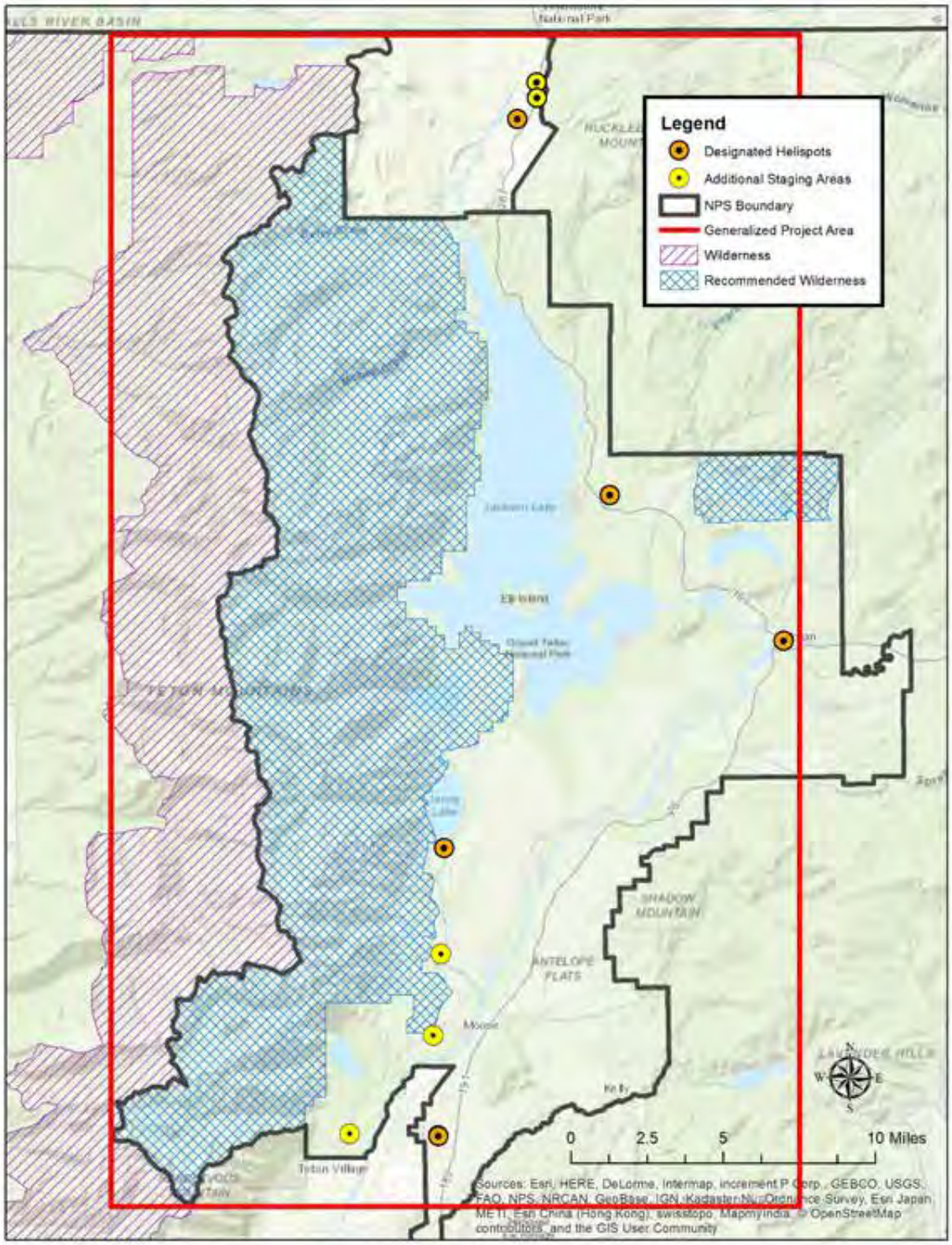

Figure 1. The generalized project area (outlined in red), Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway, Wyoming, 2019.

6.0 Species Considered and Evaluated

Five federally listed or proposed wildlife species and one critical habitat occur or have potential to occur within the project area (Table 2). Three of these species (Canada lynx, grizzly bear, and wolverine) are retained for further analysis (see below).

Table 2. Endangered, threatened, and proposed species of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway, 2019.

Common Name (Scientific Name)	Status[1]	Habitat Description	Potential Occurrence in Teton Range?	Rationale for Exclusion[2]
Canada lynx *(Lynx Canadensis)*	T	Boreal forest types and adjacent habitats. Distribution is closely tied to that of snowshoe hares. In Wyoming lynx primarily occur in spruce-fir and lodgepole pine forests.	Yes	Retained
Canada lynx critical habitat	Designated	A small amount of designated critical habitat for lynx occurs within the John D. Rockefeller Parkway outside of the project area.	Yes	NICH
Grizzly bear (*Ursus arctos*)	T	Occupies a wide variety of habitats, including areas with extensive forested cover interspersed with grasslands and meadows, shrublands, and riparian communities. Grizzly bears are omnivorous generalists that are highly adaptable. In Wyoming grizzly bears occur in the northwest portion of the state.	Yes	Retained
North American wolverine (*Gulo gulo*)	PT	The wolverine is a habitat generalist, typically associated with large tracts of remote, undisturbed mountainous areas.	Yes	Retained
Whitebark pine	C	Typically grows at timberline or below timberline in the subalpine zone. In Wyoming the elevation distribution for whitebark pine is generally between 7,000-10,500 feet.	Yes	NE
Yellow-billed cuckoo (*Coccyzus americanus*)	T	Yellow-billed cuckoos breed in dense willow and cottonwood stands in river floodplains.	No	ELE, HAB, NE

[1] Status Codes: E=federally listed endangered; T=federally listed threatened; P= federally proposed for listing; Ex/N = Experimental/Nonessential (treated as threatened in NPS units), C= federal candidate for listing (warranted but precluded); and CH=designated critical habitat; 2 Exclusion Rationale Codes: ODR=outside known distributional range of the species; HAB= no habitat present in analysis area; ELE= outside of elevational range of species; NE = action not expected to affect the species; NICH = action not expected to change amount or condition of critical habitat.

Whitebark pine, the yellow-billed cuckoo, and designated critical habitat for Canada lynx were dismissed from further analyses. These species and critical habitat would not be impacted by implementation of Alternative C, consequently they are dismissed from further analysis. None of proposed actions in Alternatives would affect whitebark pine or its habitats. Yellow-billed cuckoos are migratory and generally are only present in northwest Wyoming during the summer months. They nest in low elevation riparian woodland forests, which do not occur in the action area. Although a small amount of designated critical habitat for lynx occurs within the action area, no activities that would change the amount or

condition of lynx habitat are proposed.

7.0 Evaluated Species Information

7.1 Field reconnaissance

Although no survey or research efforts were specifically conducted for this project, there have been numerous efforts over the last 20 years to assess the current status of Canada lynx, grizzly bears, and wolverine in the Greater Yellowstone Ecosystem (GYE), including in GRTE. These efforts have focused on documenting distribution and movements of both species and better understanding their ecology.

The list below summarizes Canada lynx research and survey efforts conducted in the southern GYE:

- Wyoming Game and Fish Department (and US Forest Service Rocky Mountain Research Station in some years) tracks surveys and tracking of radio collared individuals, 1995-2005;
- National lynx survey grid in Wyoming Range west of Big Piney, 2000-2001;
- Track surveys in GRTE and adjacent Bridger-Teton National Forest led by S. Pyare, 2000-2002;
- Yellowstone National Park conducted extensive surveys for lynx throughout the park, 2001-2004;
- Endeavor Wildlife Research conducted extensive surveys for lynx throughout the Bridger-Teton National Forest, 2004-2005 and 2008-2009; and
- US Forest Service mesocarnivore survey (included survey sites in GRTE-JODR), 2016-2017;

Since 1973, the Interagency Grizzly Bear Study Team has conducted short- and long-term research that addressed needs for bear management; monitored the grizzly bear population, and their habitats, foods and impacts to humans; and provided technical support to agencies and other groups responsible for the immediate and long-term management of grizzly bears in the Greater Yellowstone Ecosystem (GYE), which includes the park. In addition to annual reports on the state of the grizzly bears in the GYE, examples of these works relevant to grizzly bears that use the park include the following:

- Assessment of bear diets in the park led by Cecily Costello of Montana Fish, Wildlife and Parks in collaboration with the park, Shoshone National Forest, and the U.S. Geological Survey, 2004-2006.
- Examination of habituation and management of grizzly bears in Yellowstone and Grand Teton National Parks, led by Kerry Gunther of the National Park Service, 1984-2014.
- Evaluation of temporary bear movements as a potential response to the elk reduction program in the park led by Frank van Manen of the U.S Geological Survey in collaboration with the park, 2014-2015.

The following is a summary of wolverine research and survey efforts conducted in the Tetons since the late 1990s.

- Capture collaring effort led by Jeff Copeland in collaboration with Grand Targhee Ski

Resort and Teton Valley 4H, 1997-2000;

- Hornocker Wildlife Institute and then Wildlife Conservation Society led efforts to investigate wolverine ecology, 2000-2011;
- Round River Conservation and US Forest Service Rocky Mountain Research Station led effort to investigate interactions between wolverines and winter recreation, 2013-2016;
- US Forest Service mesocarnivore survey using camera traps, 2016-2017; and
- Tri-State Wolverine Project using camera traps, 2017.

In March 2017, the US Forest Service survey effort detected a single wolverine at a camera station in the Berry Creek drainage at the north end of the park. Wyoming Game and Fish Department personnel also detected a wolverine at a sampling site east of the park in the Teton Wilderness in March 2017.

7.2 Species Status and Biology

Canada lynx

Status - The Canada lynx was listed as a threatened species on March 24, 2000. The USFWS determined that the lack of protections for lynx in federal land and resource management plans rendered them inadequate to protect the species (USFWS 2000). Critical habitat was designated for Canada lynx in 2006 and revised in 2009, but no critical habitat was designated within the park. However, in September 2013, the USFWS announced a proposal to revise the critical habitat designation for Canada lynx in the contiguous United States. In September 2014, the USFWS published a final rule that revised the critical habitat designation for the lynx DPS and a revised definition for what constitutes the range of the DPS (USFWS 2014b). The revised critical habitat designation includes habitat within the northeastern corner of the park.

Life History - The Canada lynx is a medium-sized (17-23 lbs.), short-bodied cat (26-34 in. long) with long legs and an overall stocky build (Clark and Stromberg 1987) with males slightly larger than females. Paws are large and well-furred, ears tufted, tail blunt and short, and the head has a flared facial ruff. Winter coloring is typically grizzled brownish-gray mixed with buff or pale brown on the top and grayish-white or buff-white on the underside. In summer, the pelage is more reddish to gray-brown. The tail is black-tipped all the way around.

The breeding season for Canada lynx lasts a month with timing dependent on the local climate (March-May). Gestation lasts approximately 64 days and young are typically born in May or early June. The dens are generally situated mid-slope and face south or southwest. Litters (1-8 kittens) tend to be larger when prey is abundant. Canada lynx kittens (6-9 oz. at birth) have greyish buff fur with black markings. They are blind and helpless for the first 14 days, and are weaned at 12 weeks.

Habitat Requirements and Distribution in Analysis Area - The common attributes of lynx habitat across its range include dense horizontal cover, persistent snow, and moderate to high snowshoe hare densities (Interagency Lynx Biology Team 2013). Mixed-conifer forest, including

Table 3. Lynx habitat within Lynx Analysis Units (LAU) in Grand Teton National Park, 2013.				
LAU	**LAU size (acres)**	**Lynx habitat (acres)**	**Lynx habitat (acres) in suitable condition (% of total habitat)**	**Lynx habitat (acres) in unsuitable condition (% of total habitat)**
Berry	37,503	29,965	25,118 (84%)	4,847 (16%)
Webb	28,311	14,091	12,687 (90%)	1,404 (10%)
Steamboat	18,557	15,784	15,308 (97%)	476 (3%)
Two Ocean	30,005	20,199	18,250 (90%)	1,949 (10%)
Granite	37,481	16,131	16,022 (99%)	109 (0.6%)

spruce-fir and lodgepole pine, are the primary vegetation types used by lynx in the Rocky Mountains (Interagency Lynx Biology Team 2013). Young conifer forests (roughly 10–40 years post-disturbance) that have high densities of regenerating stems that protrude above the snow provide foraging habitat for lynx. Mature multi-storied confer stands with well-developed understories also provide foraging habitat. Lynx den sites generally occur in mature conifer forests with abundant coarse wood debris and dense horizontal cover (Interagency Lynx Biology Team 2013).

The analysis area falls within the Greater Yellowstone core area identified for lynx (USFWS 2005). Lynx habitat in the park was mapped in accordance with the Canada Lynx Conservation and Assessment Strategy (Figure 2; Ruediger et al. 2000). Five lynx analysis units (LAUs), and associated habitat and conditions were identified within the park (Table 3).

Regional and Local Distribution - Lynx historically occupied (Reeve et al. 1986), and apparently still persist, in Wyoming in low numbers. The best contiguous lynx habitat in Wyoming is in the northwestern and western portion of the state, while the remainder of lynx habitat in the state is highly fragmented, widely dispersed, and typically isolated by large expanses of arid shrubland (Ehle and Keinath 2002). The distribution of documented lynx specimens and observations in Wyoming indicate that they most consistently occupy the Salt River, Wyoming, Teton, Wind River, Gros Ventre, and Absaroka mountain ranges (Reeve et al. 1986). Lynx are recorded less frequently in the Uinta and Bighorn ranges, and very sporadically in eastern Wyoming (Beauvais et al. 2001, Murphy et al. 2006).

A query of the park's rare species observation database turned up 18 reports of lynx, but the reliability of these reports is unknown. No lynx observations have been reported in ≥10 years. Pyare (2005) conducted hair snag and track surveys from 2000-2002 in portions of the park and the Bridger-Teton National Forest. No lynx were detected at hair snag locations. One possible set of lynx tracks and a day bed were found in the Arizona Creek drainage in January 2002. This area is located north and east of the analysis area, east of highway 89 and southwest of Huckleberry Mountain. Track densities for potential lynx prey species were also high in this area (Pyare 2005). Murphy et al. (2006) documented lynx presence and distribution in Yellowstone National Park from 2001-2004. They confirmed lynx presence at three locations in the eastern portion of the park. Holmes and Berg (2009) conducted lynx surveys in the park and surrounding National

Forest and Yellowstone National Park in 2009. No lynx were detected within the park, but lynx tracks were located on Togwotee Pass east of the park on six separate occasions and two sets of possible lynx tracks were found in Yellowstone. Lynx from the Colorado reintroduction occasionally dispersed to Wyoming (Shenk 2007). An area of high density lynx use was historically documented in the park on the west side of Jackson Lake north of Moran Bay.

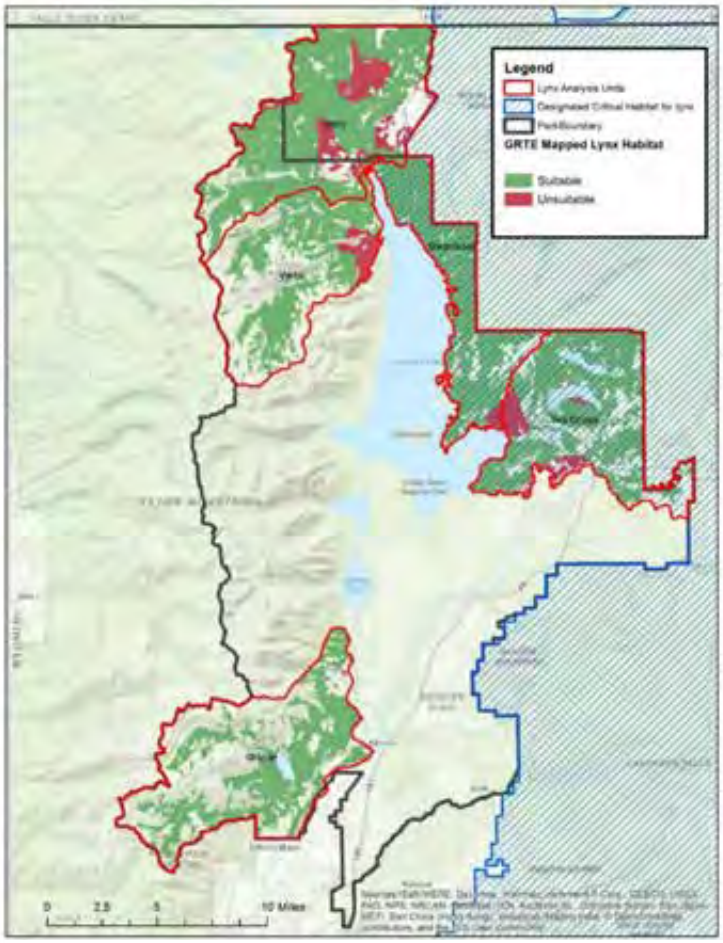

Figure 2. Condition of mapped lynx habitat (suitable or unsuitable condition) and delineated Critical Lynx Habitat, Grand Teton National park and the John D. Rockefeller, Jr. Memorial Parkway, 2013.

Threats - The updated Lynx Conservation Assessment and Strategy (Interagency Lynx Biology Team 2013) identified four anthropogenic influences that were of concern to lynx conservation including: climate change, vegetation management, wildland fire, and fragmentation. Potential effects of climate change include: 1) possible elevational or latitudinal shifts in distribution of lynx and their prey, 2) changes in periodicity of snowshoe hare cycles, 3) reductions in the amount of lynx habitat and associated lynx population size due to changes in precipitation, particularly snow suitability and persistence, and changes in the frequency and pattern of disturbance events, 4) changes in demographic rates, and 5) changes in predator-prey relationships (Interagency Lynx Biology Team 2013). Vegetation management practices can have beneficial, neutral, or negative effects on lynx and snowshoe hare habitat and populations. Adverse effects can result from treatments that reduce dense horizontal cover that provides habitat for snowshoe hares. Treatments that remove understory species, reduce stem densities, or remove trees in multi-stored forests can diminish the habitat value of forests for snowshoe hares and lynx. Wildland fire management may have short-term adverse but long-term beneficial effects, as there is typically a reduction in cover after a burn, but as regeneration and succession progresses over the next 10–40 years suitable habitat conditions for snowshoe hares return. Permanent or temporary removal of forest cover, development of highways and infrastructure, and other forms of intensive development can fragment lynx habitat. Fragmentation can adversely affect lynx by reducing the total amount of lynx habitat, increasing the isolation of habitat patches, or reducing the ability of wildlife to effectively move between patches of habitat.

Grizzly bear

Status - Grizzly bears once roamed much of the western United States, but were extirpated from much of the historic range by the middle of the twentieth century (USFWS 1993). A small population persisted in Yellowstone National Park. Grizzly bears were listed as threatened under the ESA in 1975 (USFWS 1975), and a recovery zone was subsequently delineated. On March 29, 2007, the USFWS removed the Yellowstone distinct population segment of grizzly bears from the threatened species list (USFWS 2007b), but on September 21, 2009, the Federal District Court in Missoula, Montana issued an order enjoining and vacating the delisting of the Greater Yellowstone Area grizzly population. This was upheld by the 5th Circuit Court of Appeals in November 2011. The Yellowstone grizzly bear population was delisted on June 30, 2017 due to its strong population numbers (USFWS 2016c), but was relisted as Threatened under the ESA by judicial order in late September 2018.

Grizzly bear management within GRTE-JODR is governed by the park's Human-Bear Management Plan (NPS 1989), Bear Hazing and Aversive Conditioning Policy (NPS 2018), the Interagency Grizzly Bear Guidelines (Interagency Grizzly Bear Committee 1986), the Grizzly Bear Recovery Plan (USFWS 1993), and the Conservation Strategy (Strategy) for the Grizzly Bear in the Greater Yellowstone Area (USFWS 2016). Although, with the relisting of the grizzly bear in 2018, the Strategy is not currently in effect, the NPS uses both the Recovery Plan and the Strategy as guidance in monitoring and managing the effects of NPS activities on the grizzly bear.

The IGBST annually monitors unduplicated females with cubs of the year (COY) within the GYE; calculates a total population estimate for the entire GYE based on the model-averaged estimate of females with COY; monitors the distribution of females within each bear management unit within the Recovery Zone; and monitors all sources of mortality. The most recent estimate of the area occupied by grizzly bears in the Yellowstone Ecosystem is approximately 25,038 mi^2. Grizzly bears continue to expand outward in the GYE, with the greatest expansion occurring in the northern, eastern, and southern regions of the range. In 2018, 18 of 18 bear management units in the GYE were occupied by female grizzly bears with COY, and 17 units had verified observations of females with young in at least 3 years of the last 6-year period (2013-2018). The estimate for the Demographic Monitoring Area (DMA), which includes the GYE, was 709 bears (95% CI 632-786) in 2018. The DMA is the area that demographic criteria for the Yellowstone grizzly bear population is monitored and evaluated.

Life History - Mating season is typically June-July; embryos do not implant and develop until near or at onset of winter torpor. In January, usually one to three cubs are born (approx. 1 lb). The cubs gain weight quickly and often reach 10-20 pounds by the time they emerge from the den. Cubs remain dependent upon their mother's milk for almost a year and stay with their mother for up to three years. They typically reach breeding age at about 4.5-5.5 years, although in some cases they may not breed until 8.5 years. When they do reach breeding age, females usually breed

once every three years. Males compete with each other for breeding opportunities and seek females each year. Grizzlies usually live to 15-20 years of age, and a few survive for up to 30+ years.

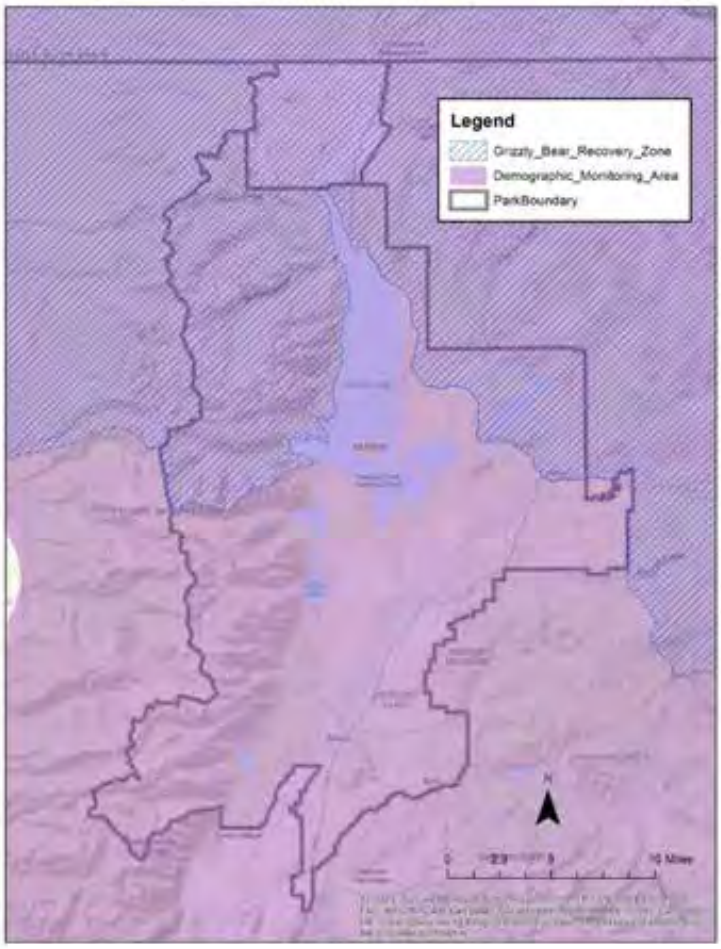

Figure 3. The Recovery Zone and Demographic Monitoring of grizzly bears in Grand Teton National Park and John D. Rockefeller, Jr., Memorial Parkway, 2019.

In preparation for winter, bears increase their food intake significantly during a life stage called hyperphagia. Hyperphagia is typified by maximizing nutrient intake and increasing rate of deposition of body reserves (Schwartz et al. 2014). Early hyperphagia begins in August and typically continues through September–October and/or until food availability decreases to trigger the period of torpor (i.e., denning). Late in the fall, grizzly bears begin looking for a location to dig a den, and may travel long distances before finding a suitable area. Generally, they seek remote areas where deep snow will serve as insulation until spring. Grizzly bears typically enter their dens in late October-November (Table 4), although in GRTE bears have been observed in December and early January. Male grizzly bears usually emerge from the den in March-April, while females emerge in late April-May (Table 4).

Habitat Requirements and Distribution in Analysis Area - Grizzly bears occupy a variety of coniferous forest and rangeland habitats within and adjacent to the park, including the analysis area (Figure 1). They are a wide-ranging species that requires adequate space and isolation from humans, suitable den sites, and an adequate and diverse food base. Grizzly bears have large home ranges (adult females = 50-300 mi^2; adult males = 200-500 mi^2) that encompass a diversity of habitats in typically montane associations. Indeed, their use of the landscape is a function of seasonably available food and the presence of humans and their activity. Grizzly bears are flexible omnivores that feed on a great variety of food, depending on seasonal availability and what is available within their home range. Bears typically feed on carrion, emergent vegetation, and ungulate neonates during the spring and early summer. In summer and fall, they may move to

Table 4. Week of den entry for 3 classes of grizzly bear in the Greater Yellowstone Ecosystem, 1975–1999.

	Den Entry		Den Emergence	
Class	**Mean week**	**Latest week**	**Mean week**	**Latest week**
Known pregnant females	1st week Nov.	1st week Nov.	4th week Apr.	4th week Apr
Other females	2nd week Nov.	2nd week Nov.	3rd week Apr.	3rd week Apr.
Males	2nd week Nov.	3rd week Nov.	4th week Mar.	4th week Mar.

Source: Haroldson et al. 2002

higher elevations and shift their diet to fruits and whitebark pine nuts (USFWS 1993). Plant matter is important diet component in spring and summer, and bears may forage in riparian areas, avalanche chutes, and ungulate winter ranges. Gunther et al. (2014) determined that the most frequently detected items in 11,478 scats collected over 37 years (1943-2009) were grasses (58.7%); ants (15.8%); whitebark pine seeds (15.4%); clover (11.2%); and dandelion (10.9%). Other items frequently detected were elk (8.3%); thistle (6.9%); horsetail (5.6%); yampa roots (4.9%); *Vaccinium* spp. berries (4.9%); cutthroat trout (4.4%); biscuitroot (4.0%); springbeauty (2.9%); bison (2.8%); and fireweed (2.7%). Grasses, ants, and elk were found in the collected scats in all years; clover was present during 97% of years; and elk, thistle, and horsetail were found in 94% of years.

Regional and Local Distribution - Grizzly bears have increased from relatively uncommon to common in the park during the last 20 years, in conjunction with a steady trend toward increasing bear density in the southern GYA. Grizzly bears continue to expand their range outside the recovery area. Although the recovery area only overlaps the northern portion of the park/analysis area (Figure 3), the entire park is now considered occupied grizzly bear habitat (Bjornlie et al. 2014). Indeed, bears are seen throughout the park. In particular, grizzly bear activity in the northeastern quarter of the park (i.e., Jackson Lake's eastern shores to the park boundary east of Moran) has been common for many years. Grizzly bears frequent elk calving areas in the willow flats near Jackson Lake Lodge and the Snake River bottom in the spring and early summer. Since 2008, sightings of grizzly bears (including those with dependent young) have been increasingly reported in the southern third of the park. In 2018, grizzly bears frequented the Moose-Wilson Corridor south of Moose where berry producing shrubs were abundant. Bears were also observed along east boundary of the park (Antelope Flats-Shadow Mountain). Bears are also commonly seen on Blacktail Butte in the late fall-early winter where they likely seek out elk remains left behind by participants in the Elk Reduction Program.

Threats - Human-caused mortality and habitat loss are the primary threats to grizzly bears. Maintenance of adequate, secure habitat along with management of grizzly bear/human conflicts is key to the long-term sustainability of grizzly bear populations. In the GYE, the majority of known grizzly bear mortality is attributable to human causes. Of the grizzly bear mortalities documented in the GYE in 2018, 41 of 46 mortalities in the DMA were attributable to human causes: 39% were related to site conflicts or human injury, 24% were livestock related, and 20% were hunting related.

Secure habitat is important to enable bears complete access to their life-history requirements. Human presence and activity can limit habitat use, increase human-bear interactions, and (or) attract bears to unnatural or unsecured food sources. This increases the mortality risk for bears. Developed sites in grizzly bear habitat increase the potential for conflict with humans primarily due to the possible availability of human foods. Developments also reduce the effectiveness of the natural habitat near these sites (i.e., functional habitat loss). The larger the developed site and the more people using the site, the greater the potential for conflicts and loss of functional habitat (Schwartz et al. 2010). This increases the risks of conditioning bears to unnatural foods, conflict with humans, and likely removal of food-conditioned bears. Activities associated with human presence and developments can often result in continual management actions that adversely impact bears (USFWS 2007a). However, providing secure food and trash storage, enforcing storage regulations for attractant, and information and education efforts can mitigate much of the potential for these types of conflicts.

Wolverine

Status - The USFWS proposed listing the wolverine as threatened in February 2013. In August 2014 the species was withdrawn from consideration after the USFWS determined that the factors affecting the species were not as significant as initially thought (primarily due to uncertainty regarding the dependency of wolverines on late spring snowpack, and the inadequate spatial resolution of existing climate models to predict changes at a scale relevant to the species). Several environmental groups filed legal challenges to the decision to withdraw the species from consideration, and in April 2016 a Montana district court overturned the decision, effectively returning the species to the proposed threatened status of 2013 (USFWS 2016a).

Habitat Requirements and Distribution in Analysis Area - Wolverines generally select areas that are cold and have persistent spring snow, but they do not select for any specific vegetation/habitat type (USFWS 2013). Wolverines require large tracts of land to accommodate large home ranges and extensive movements (WGFD 2017a, Banci 1994). In Wyoming, breeding populations are primarily found in the prominent northwestern mountain ranges. They use several habitats and have been located in forested drainage bottoms, sparsely timbered cirque basins, and steep, remote high-elevation habitat. The primary wolverine habitat during the winter is mid-elevation conifer forest. Summer use of high-elevation cirque habitats is related to the availability of prey and den sites, as well as relief from heat (Copeland et al. 2007). Due to their large home range size and habitat needs, this species is rare and uncommon and most likely always has been. Wilderness and roadless lands account for much of the areas wolverines are known to use, although it is unknown whether this is due to avoidance of people, or whether wolverines tend to choose areas that are not conducive to human development (Copeland et al. 2007). Wolverines do appear capable of adjusting to human disturbance (USFWS 2013). Suitable habitat is available within the park and there is one documented individual likely traveling through and/or living in the montane portion of the park, which may include the action area.

Life History - Breeding commences at ≥4 years old, and occurs every two to three years with average litter sizes just over one cub. Females give birth to two or three young in late winter to early spring. Young are born in dens dug through the snow to ground level in the upper subalpine

zone, at or near treeline, and are associated with boulder fields, avalanche debris, or log jams. A source of carrion or other food is usually nearby. Wolverines appear to be highly selective in choice of natal denning and kit rearing habitat. The persistence of snowpack into late spring is a strong determining factor in wolverine presence due to its importance in denning (Copeland et al. 2010, USFWS 2013). Cold, structured microsites are used to cache food, as this reduces competition from insects, bacteria, and other scavengers (Inman et al. 2012). Offspring accompany their mother for about a year before they disperse from the natal area. Wolverines are highly territorial and naturally occur at very low densities owing to their large spatial requirements.

Wolverines are opportunistic feeders and consume a variety of foods depending on availability. They primarily scavenge on carrion killed by larger predators, such as wolves, bears, cougars, and humans, or animals that have died from natural causes (Hornocker and Hash 1981, Banci 1994). They occasionally kill their own prey when the opportunity arises, typically small mammals or birds, but do prey on neonatal ungulates; they may also eat fruits, berries, and insects. The constant search for food keeps them moving throughout their range with daily movements of 20 miles common. Hornocker and Hash (1981) have suggested that food availability is the main factor determining the movements and range of wolverines. Connectivity between wolverine populations and habitat patches is generally tied to persistent spring snow, and wolverines appear to be able to disperse between habitats and through areas where human developments occur (Schwartz et al. 2009, USFWS 2013). As concluded in the draft recovery outline for wolverine (USFWS 2013) evidence shows that dispersing wolverines can cross transportation corridors with success.

Regional and Local Distribution - The current distribution of wolverines in the region is not thoroughly known. Several research projects are underway to better understand the species' distribution in northwestern Wyoming, which lies at the southeastern limit of the species' known or suspected range at present. Although rare within the Teton Range wolverines are known to inhabit the high elevation remote portions of the park. Since the late 1990s there have been numerous wolverine focused research and survey efforts conducted in the Tetons (see above). In recent years, wolverine observations have been scant, however, in March of 2017 a single wolverine was detected at a camera site established as part of a mesocarnivore survey in the north end of the park. Other recent observations (tracks and sightings) of an individual(s) in the Tetons west of the piedmont lakes (i.e., Phelps, Jenny, String, and Leigh Lakes) suggest at least one wolverine may reside in the Tetons. Recent field work has documented a total of three individuals in the Gros Ventre, Wind River, and Southern Absaroka mountain ranges, in addition to the one individual found in the Teton Range (Inman et al. 2015, Heinemeyer and Squires 2015).

Although population levels of elusive species like wolverines are difficult to determine with certainty, it appears that there may be just one individual currently occupying the available habitat in the park. Recent research on the species' distribution in the Teton Range has been conducted by the Wolverine Winter Recreation Research Project, led by the U.S. Forest Service Rocky Mountain Research Station and Round River Conservation Studies. Trapping efforts during the winters of 2014 and 2015 on both the west and east sides of the Teton range northwest

of Jackson, Wyoming resulted in the capture of only a single male (the same individual each year), whose home range was estimated to cover approximately the northern two-thirds of the Teton Range, including the northwestern portion of the park (Heinemeyer and Squires 2014, 2015).

Threats - Loss and fragmentation of habitat may isolate populations, reduce genetic diversity, and increase the risk of population extirpation (Wyoming Game and Fish Department 2017a). These risks result from three main factors: (1) small total population size; (2) effective population size below that needed to maintain genetic diversity and demographic stability; and (3) the fragmented nature of wolverine habitat in the contiguous U.S. which results in smaller isolated "island" patches separated by unsuitable habitats. Loss of persistent spring snow related to climate change is considered to be the main factor in loss/fragmentation of wolverine habitat (USFWS 2013), and harvest is considered the factor most affecting wolverine survival, with trapping accounting for the greatest number of individuals killed (Hornocker and Hash 1981, Banci 1994, Krebs et al. 2004, Squires et al. 2007).

8.0 Environmental Baseline

As defined under ESA, the environmental baseline includes past and present impacts of all federal, state, and private actions in the action area; the anticipated impacts of all proposed federal actions in the action area that have undergone formal or early section 7 consultation; and the impact of state and private actions which are not included in the environmental baseline.

8.1 Examples of Recent Consultations with FWS within the Analysis Area

- Winter operations for YELL and GRTE
- North Park Road Construction
- Reissuance of grazing permits in GRTE
- GRTE Fire Management Plan (and multiple prescribed fires and fuel reduction treatments)
- Trails Programmatic Assessment
- White Grass Ranch Rehabilitation and Adaptive Re-use
- GRTE Transportation Plan
- USFWS/NPS Bison and Elk Management Plan
- Moose Headquarters Rehabilitation
- GRTE Historic Properties Management Plan
- GRTE/YELL Snake Headwaters Plan
- Glacier and Climate Monitoring
- Jenny Lake Renewal
- UW-NPS Research Station Rehabilitation
- Moose-Wilson Corridor
- Gros Ventre Roundabout
- Jackson Hole Airport

8.2 Past and Current Activities within the Analysis Area

Past and ongoing current actions in the analysis area include: trail maintenance, search and rescue operations, fire management activities (including long-term fire suppression), vegetation and exotic plant management, scientific or social science research and monitoring activities, year-round backcountry recreation, human development, ski area development/management, permitted helicopter skiing, public hunting outside the park, and overflights and airport activity.

The amount of wildlife habitat in the Teton Range has been reduced due to human disturbance and fire suppression. Ski area development has resulted in the direct loss of wildlife montane habitats; indirect loss of habitat through avoidance behavior and increased movements has been due to winter (e.g., bighorn sheep; Courtemanch 2014). Fire can influence wildlife distribution through changes in habitat conditions (e.g. vegetation type, seral stage, amount and quality of various habitats). Decades of fire suppression has altered natural fire regimes and changed vegetation and wildlife habitat. Continued fire suppression could result in further negative impacts to vegetation and wildlife habitat. Alternatively, decisions to manage wildfires could have long-term beneficial effects to wildlife habitats, however, the timing and specific locations of fire events would influence the magnitude and type of impacts and benefits.

In the Teton Range outside of the park, many wildlife species, such as elk, mule deer, bighorn sheep, mountain goats, and predators, can be hunted. These seasons are managed by the Wyoming Game and Fish Department. Hunting in areas close to the park boundary could reduce the numbers of wildlife within the park as these species generally range across political boundaries. However, hunting quotas are typically tied to herd unit objectives.

The park performs and authorizes various scientific surveys and research efforts within the action area (Figure 1). These studies have minimal impacts on wildlife in particular. These activities provide indirect benefits to wildlife by increasing the understanding of the status of wildlife populations and other resources of interest in the park. Wildlife monitoring from fixed-wing aircraft and helicopters occur within the action area several times throughout the year. Fixed-wing telemetry and observation flights have low potential to disturb wildlife as these flights occur infrequently, at a time of year when habitat is not limiting. On the other hand, winter helicopter surveys, helicopter supported search and rescue operations, and non-permitted scenic flight tours have some potential to disturb wildlife if they are encountered along flight paths. Such interactions could result in short-term (approx. ≤1 hour) increases in movement and physiological stress that would subside once the aircraft has passed. Aircraft landing and departing the Jackson Hole Airport typically follow designated flight paths away from the Teton Range, thus are unlikely to directly disturb wildlife. However, incoming and outgoing aircraft and airport operations add to the background noise audible to wildlife in the Teton Range.

9.0 Effects to Evaluated Species and Determinations

9.1 Federally Listed Species - Direct and Indirect Effects

Canada lynx

Lynx are strongly tied to subalpine forests with abundant snowshoe hare, whereas mountain goats

are generally associated with non-forested alpine or subalpine habitats near steep terrain. In addition, lynx are typically active at dawn and dusk, when monitoring and management activities would not occur. There are no direct effects from these Alternative C to lynx, and the likelihood of temporal and spatial overlap between lynx and mountain goats during monitoring or management activities is low. Notwithstanding, aircraft could overfly habitat suitable for lynx, thus possibly disturbing any individuals or prey species that are present. Any disturbance is likely to be limited to the time the aircraft is passing overhead (<10 minutes). Additionally, no lynx have been observed or detected in the park for ≥10 years, so the likelihood of this potential limited disturbance to a lynx is highly unlikely.

Grizzly bear

Proposed helicopter-based mountain goat removal actions would occur within occupied grizzly bear habitat. The northern portion of the action (Teton Range north of Leigh Canyon) is within the grizzly bear recovery zone (Fig. 3), while the southern half is outside of the recovery zone. Mountain goat density is highest in the southern half of the Teton Range. Studies have found that low flying aircraft can affect bears: responses can range from short-term disturbance or a flight response, increased physiological stress, and/or temporary displacement from an area (Støen et al. 2010, Ditmer et al. 2015, Wilker and Barnes 1998). Actual effects are likely influenced by intensity, duration, timing, predictability, proximity of operations to the animal, or location of the animal relative to secure habitat. Thus, increased noise and activity associated with removal actions in the action area, adjacent habitats, and along flight paths could result in the displacement of bears, increased stress, and/or reduced feeding.

In the GYE, most grizzly bears are denned by late November (Table 3; Haroldson et al. 2002). Given typical weather and snow conditions in the Teton Range in late fall and availability of food resources, few grizzly bears would likely be active in the project area during the operational window for helicopter-based removal and monitoring actions (late November–mid-February). Consequently, disturbance or displacement impacts to active grizzly bears from these activities are not anticipated. Any effects would likely be insignificant and thereby discountable due to their short duration, timing (during denning period), low frequency, and localized extent (Table 1).

During denning, direct overlap of mountain goats and modeled denning habitat is limited; however, areas used by mountain goats are adjacent to potential denning habitat (Figure 4). Of 30 grizzly bear dens documented in GRTE-JODR from 2002-2017 (IGBST unpublished data), most occurred in the Teton Range. Of those, the vast majority occurred north of Colter Canyon in a portion of the park with relatively low mountain goat density (Figure 4). Grizzly bears may be particularly vulnerable to disturbance while denned, especially early in the denning period when abandonment is more likely to occur (Reed-Eckert et al. 2004). To limit this specific potential disturbance and possibility of abandonment, helicopter-based removal of goats will be from mid-December–mid-February, and when possible, be focused in areas outside potential grizzly bear denning habitat.

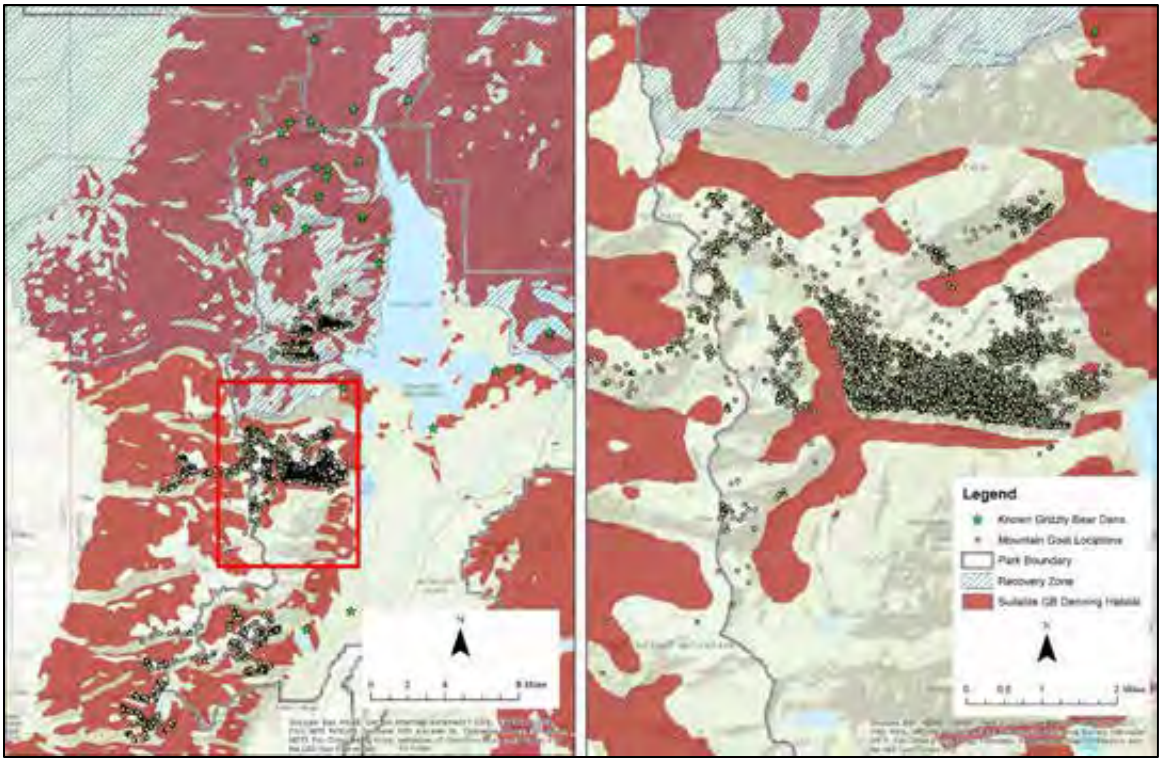

Figure 4. Potential grizzly bear denning habitat (80th percentile; Podruzny et al. 2002) and GPS locations for radio collared mountain goats in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway and the surrounding area (left panel) and the focal project area (red inset on left panel; right panel).

Several specific Conservation Measures aimed at limiting disturbance grizzly bear den sites will be implemented:

- Personnel involved in helicopter- and ground-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If an actual or potential den location is found or suspected, either through aerial survey or collar data, an appropriate disturbance-free buffer will be established around the den. Focal helicopter activities, such as those associated with aerial removal of mountain goats, will occur between mid-December and mid-February to specifically reduce potential impacts to denning grizzly bears.

Over the last decade grizzly bear distribution and numbers have increased in the south end of GRTE, particularly in the low elevation portions of the park at the base of the Teton Range. Grizzly bear use of the parks elk reduction program is well documented (van Manen et al. 2019)

and is consistent with the findings of several studies that have documented a shift in grizzly bears distributions during ungulate hunting seasons as bears make use of animal remains left behind by hunters (Ruth et al. 2003, Haroldson et al. 2004). Such shifts in distribution can bring grizzly bears and hunters into close proximity and conflicts between the two may arise (Gunther et al. 2004). Skilled public volunteers would be used to assist with ground removal of mountain goats during a likely single management period in fall 2020 (or later). Remains of mountain goats (i.e., carcasses or gut piles) from all ground-removal activities could be a potential attractant for grizzly bears. Skilled volunteers would be authorized to remove the meat, pelt, and skull of all mountain goats they kill (USC 2019) and would be encouraged to pack out as many carcasses as safely possible. Any ground removal management period using skilled volunteers would begin after 1 October and last ≤6 weeks; and we estimate ≤10% of the mountain goat population could be removed through this program. Because the skilled volunteer program could occur during late hyperphagia, a time frame when grizzly bears are intensively focused on feeding prior to hibernation and human-grizzly bear conflicts are often high (Gunther et al. 2004), there is potential for conflicts to occur. However, the following Conservation Measures would minimize human-bear encounters that could result in a conflict from the skilled volunteer program:

- limited number of skilled volunteers will be involved that have been vetted through a rigorous screening process;
- participants will be required to carry bear spray;
- participants will received bear safety training and education;
- participants will work in groups of ≥2 people; and
- locations of mountain goat kills and remains will be reported within 12 hours, and subsequent ground-based removals will be managed to minimize activities in areas with known carcasses (as is current standard protocol for managing large carnivores).

Mountain goat carcasses left on the landscape to decompose over the winter could be a potential food source/attractant for grizzly bears. The primary operation window for helicopter-based removal actions would be mid-December through mid-February, when the majority of grizzly bears are denned. Only one 2-week operational period is anticipated on an annual basis for several years (Table 1). Locations and statuses of carcasses left over the winter will be noted, and if the locations have potential for conflict with users in the spring (e.g., ≤100 yards from trails, campsites, camping zones, cabins, etc.), temporary closures will be implemented for human safety and carnivore conservation.

Wolverine

Wolverine are tied to high elevation, remote areas where they are active year-round. Their distribution likely overlaps areas used by mountain goats throughout the Teton Range. Weaver et al. (1996) characterized wolverine as a species with low resiliency based on their life history characteristics (e.g. low density occurrence and low reproductive rates), therefore they may be particularly susceptible to disturbance at critical times of year. In winter, wolverine rely on ungulate carrion as their primary food source (Inman and Packila 2015). Availability of winter food is likely highly variable from year to year.

Actions to monitor and remove mountain goats using helicopters could disturb individual wolverine present in the vicinity. The effects of aircraft operations on wolverine likely varies with intensity, duration, timing, predictability, proximity of operations to the animal, or location of the animal relative to secure habitat. Wolverine response to aircraft activity could range from no response, to increased stress, flight behavior and displacement from preferred habitats (including displacement from carcasses).

The high elevation cirque basins of the Teton Range are considered potential denning/maternal habitat for wolverine (Inman 2013). Wolverine may be especially prone to disturbance near natal dens (Banci 1994, Copeland 1996, Magoun and Copeland 1998). Consequently helicopter-based removal activities occurring from mid-February–April could cause a reproductive female to move kits and abandon the natal den, resulting in reduced productivity or in the death of all kits. Wolverine have low reproductive rates and occur at low densities making populations susceptible to activities that cause disturbance of natal dens.

Given the potential for negative impacts (displacement or during natal denning) to wolverine from helicopter-based removal activities during late winter, several Conservation Measures specific to wolverine would be implemented to reduce the potential for adverse impacts. These include:

- Personnel involved in helicopter- and ground-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine denning habitat during the sensitive denning period (wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a den location is known or a potential den location is found, an appropriate disturbance-free buffer will be established around the den.

Given implementation of these measures and ceasing helicopter-based removal activities by mid-February, displacement and/or disturbance to denning wolverines is not expected.

Mountain goat carcasses left on the landscape to decompose could be a resource subsidy for wolverine. Utilization of mountain goat carcasses could be beneficial for wolverine, especially in winter when food resources may be limited. If wolverine find and cache some carcasses the beneficial effect could extend into the spring. However, the presence of carcasses could also be an attractant for other predators that scavenge and their presence at carcasses could increase the possibility for intraspecific interactions. Because of snow depths and winter conditions, wolves are not typically found in the high elevations of the Teton Range during the winter and therefore present little threat of competition or direct mortality to wolverine. Similarly, grizzly bears are typically hibernating during the winter months and therefore present little risk, but upon exiting the den, bears may seek out carcasses that wolverine have cached. However, given the very low

apparent density of wolverines in the Teton Range and the long evolutionary history between wolverines and large carnivores throughout their sympatric ranges, these potential interspecific interactions are unlikely and/or insignificant to wolverines.

9.2 Cumulative Effects

Cumulative effects under ESA include the effects of future state, tribal, local, or private actions that are reasonably certain to occur. Future federal actions that are unrelated to the Proposed Action are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA. Past and present impacts of non-federal actions are part of the Environmental Baseline as are the impacts of federal activities that have undergone Section 7 consultation.

Cumulative effects were evaluated as the combined effects of the proposed actions with future nonfederal actions reasonably certain to occur in or in proximity to the action area. Reasonably foreseeable future state, tribal, local, or private actions include continued backcountry recreation throughout the Teton Range by members of the local and visiting public, small aircraft and helicopter activity by private individuals above the park and adjacent US Forest Service lands, increased visitation to the area, and continued development on private lands adjacent to the park. These activities likely have some level of disturbance or displacement impacts on any lynx, wolverine, or grizzly bears present. The extent to which these species may be cumulatively impacted is unknown, but it's possible that the amount of available habitat may be affected if these species avoid areas where human activity is consistent and occurs at relatively high levels.

When the overall effects of the proposed action are combined with these foreseeable future actions, there is potential for a long-term, cumulative adverse effect on lynx, grizzly bear, and wolverine in the action area. However, when the incremental level of impact associated with the proposed actions is added to the adverse effects of the listed cumulative actions, an insignificant overall increase above current levels of adverse effect is expected.

9.3 Interrelated and Interdependent Actions

There are no interdependent or interrelated action associated with the proposed actions.

9.4 Incidental Take

There will not be any incidental take of any federally listed species under this proposal.

10.0 Effect Determination

The determination of effects for Canada lynx, grizzly bear, and wolverine are summarized in Table 5 and the rationale for each species is detailed in the following narrative.

Table 5. Summary of effects determination for the preferred alternative (Alternative C).			
Common name	**Scientific name**	**Status**	**Determination**
Canada lynx	*Lynx canadensis*	Threatened	NLAA
Grizzly bear	*Ursus arctos*	Threatened	NLAA
North American wolverine	*Gulo gulo*	Proposed	NLJ

10.2 Canada lynx

The proposed action would have insignificant and discountable effects that ***may affect, but are not likely to adversely affect***, the Canada lynx based on the following rationale:

1. Due to the limited area affected by the activity and the availability of displacement areas there would be no effect to lynx range, abundance, or distribution.
2. Mortality risk to the Canada lynx is not expected to increase as a result of mountain goat removal actions.
3. Snowshoe hare populations would not be measurably affected by the proposed action.
4. No expansion of the range of competitors and/or predators would result from the proposed action.
5. No alteration of critical habitat would occur.
6. No den sites are known in the area and are unlikely given the limited amount of suitable habitat in the project area and the results of recent survey efforts where no lynx were detected.
7. The proposed actions would not be expected to measurably affect lynx at the population level.

10.2 Grizzly bear

The proposed actions would have insignificant and discountable effects that ***may affect, but are not likely to adversely affect***, the grizzly bear or its habitat based on the following rationale:

1. The timing of the majority of helicopter-based removal activities would be conducted during the winter months (December to mid-February) when grizzly bears are in their dens.
2. Although mountain goat and grizzly bear denning habitats are adjacent to one another (Figure 4), the direct overlap is limited.
3. Several conservation measures would be implemented to reduce the potential for disturbance near known den sites.
4. Given implementation of Conservation Measures and existing regulations (Superintendent's Compendium 2019), the risk of human-grizzly bear conflicts is not expected to increase.
5. Mortality risk to the grizzly bears is not expected to increase due to the use of skilled volunteers because the program would
    a. Be limited in scope (≤6 weeks annually over 1–2 years) with tight oversight controls.
    b. Be focused in a portion of the Teton Range with lower grizzly bear density.
    c. Include rigorous selection measures and bear safety training and education requirements.
    d. Require participants to carry bear spray and work in groups of ≥2 people.

    e. Mountain goat remains will be promptly reported and participants' and visitors' will be managed to avoid areas with known carcasses (as is current standard protocol for managing large carnivores).
6. Locations and statuses of carcasses left over the winter will be noted, and if the locations have potential for conflict with users, temporary closures will be implemented for human safety and carnivore conservation.
7. Due to the limited area and time affected by the helicopter activity, there would be no effect to grizzly bear range, abundance, or distribution.
8. The proposed actions would not expected to measurably affect grizzly bear at the population level.

10.3 Wolverine

The proposed action would ***not likely to jeopardize*** the continued existence of the North American wolverine or it habitat based on the following rationale:

1. Several Conservation Measures would be implemented to reduce direct short-term effects from mountain goat removal activities. In particular, a denning survey will be performed from fixed-wing aircraft prior to beginning helicopter operations activities that may occur in potential wolverine denning habitat during the sensitive denning period.
2. If a den location is known or a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
3. Due to the limited area affected by the activity and the availability of displacement areas there would be no effect to wolverine range, abundance, or distribution.
4. Wolverine reproductive rates are strongly influenced by food abundance (Persson 2005), consequently mountain goat carcasses left on the landscape could serve as a food sources for wolverine and provide a short-term beneficial effect in winter at a time when wolverine may be food limited.
5. Mortality risk to wolverine is not expected to increase as a result of mountain goat removal actions.
6. The proposed action is not expected to measurably affect wolverine at the population level.

11.0 Need for Re-Assessment Based on Changed Conditions

This BA and findings above are based on the best current data and scientific information available. A new analysis and revised BA must be prepared if one or more of the following occurs: (1) new information emerges for species currently considered in this assessment (including but not limited to a change in species distribution, newly discovered activity area, newly designated Critical Habitat, or other species information) reveals effects to threatened, endangered, proposed species, or designated/proposed critical habitat in a manner or to an extent not considered in this assessment; (2) the action is subsequently modified or it is not fully implemented as described herein which causes an effect that was not considered in this assessment; or (3) a new species is listed or critical habitat is designated which may be affected by the action that was not previously analyzed herein.

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Re_ Mountain Goat Briefing statement.pdf

From:	Consolo-Murphy, Susan (Sue)
To:	Martin, Erin
Cc:	David Gustine; Sarah Dewey; Victoria Mates
Subject:	Re: Mountain Goat Briefing statement
Date:	Monday, July 15, 2019 12:44:52 PM
Attachments:	REVISED DRAFT Briefing Statement, Mountain Goat Management Plan.July 2019.docx

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This is the latest version I drafted. May not be in all the right format.

Sue Consolo-Murphy
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On Mon, Jul 15, 2019 at 10:45 AM Martin, Erin <erin_martin@nps.gov> wrote:

> Sue,
> Gopaul would like to take an updated briefing statement with him to Denver when he leaves tomorrow morning to go over with Acting RD Chip Jenkins during his meeting on Wednesday morning. Attached are the most recent statements I have access to, do you have anything from 2019 or any updated to the September 2018 version I can send with him?
>
> Thanks,
>
> --
> Erin Martin
> Office of the Superintendent
> Grand Teton National Park
> PO Box 170
> Moose, WY 83012
> Office 307-739-3410

REVISED DRAFT Briefing Statement, Mountain Go_7.pdf

Briefing Statement - Grand Teton National Park
Bureau: NPS
Issue: Mountain Goat Management Plan
Date: REVISED DRAFT June 2019

Key Points:

- Non-native mountain goats are increasing in Grand Teton NP (GRTE) and the John D. Rockefeller, Jr. Memorial Parkway (JODR), and threaten the small and declining native bighorn sheep herd and other animal and plant resources in the Teton Range.
- The NPS is developing a management plan to remove or significantly reduce the mountain goats in the next one to five years, which could be controversial. It includes the use of aerial control and potential use of skilled volunteers to lethally remove mountain goats from the park.

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development. In recent years, sheep have declined to less than 100 animals.
- Mountain goats were first seen in the Teton Range in 1979 but only in recent years have biologists documented evidence of a rapidly increasing breeding population. Without intervention, scientists predict that the goat population could grow to 2.5-5 times current numbers. Goats now likely outnumber the small native Teton bighorn sheep population.
- Mountain goats could introduce diseases to the native Teton bighorn herd. Goats in other ecosystems have also caused the decline or extirpation of native high-elevation plant populations.

Current Status:

- The NPS prepared a draft mountain goat management plan/EA that outlined strategies to significantly reduce or remove mountain goats from the Tetons, using NPS staff and skilled contractors, primarily through lethal means. Translocations of goats back into native ranges would be an option. Biologists believe that removal of this goat population can be done one to five years if prompt action is taken.

- Goats are widely dispersed in high-elevation backcountry areas of the park and seldom seen by park visitors. Their potential removal would be logistically challenging and may become controversial; however, there is high interest among state and federal biologists and local constituents in conserving the native bighorn sheep herd in the Teton Range.

- Idaho and Wyoming maintain goats as a game species in other areas. The park received requests from the Wyoming Game & Fish Commission and Department and some members of the public to consider using skilled volunteers to assist in goat removal. This has been added as a management option.

Interested Parties:

- Governor of Wyoming; local communities; Wyoming congressional delegation. WY Game &Fish Department and Commission; Idaho Department of Fish and Game; Yellowstone NP, the Bridger-Teton and Caribou-Targhee National Forests; sportsmen's groups; Jackson Hole Conservation Alliance, NPCA, Greater Yellowstone Coalition and other environmental groups; Jackson and Teton County; regional Native American Indian tribes.

Contact:

- Gopaul Noojibail, Acting Superintendent, 307-739-3410

Re_ mountain goat plan.pdf

From:	Consolo-Murphy, Susan (Sue)
To:	Noojibail, Gopaul; Erin Palm
Cc:	Noon, Daniel; Michael Nash; Germann, Denise; David Gustine; Mates, Victoria (Vickie)
Subject:	Re: mountain goat plan
Date:	Monday, July 15, 2019 4:26:36 PM
Attachments:	Briefing Statement, Mountain Goat Management Plan.July 15, 2019.docx

FINAL updated version with Gopaul's comments from this afternoon.

Sue Consolo-Murphy
Chief, Science & Resource Management
Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
P.O. Drawer 170
Moose, WY 83012
(307) 739-3481 (w)
(307) 690-8005 (cell)
Sue_Consolo-murphy@nps.gov

On Tue, Jul 9, 2019 at 3:38 PM Mates, Victoria (Vickie) <victoria_mates@nps.gov> wrote:

Thanks Sue,

I have read the briefing statement and do not have any additions to what Daniel and Gopaul have provided.

Vickie Mates
Acting Deputy Superintendent
Grand Teton National Park
Box 170
Moose, WY 83012
(307) 739-3430 (office)
(307) 690-1825 (mobile)

On Mon, Jul 8, 2019 at 9:51 AM Noojibail, Gopaul <gopaul_noojibail@nps.gov> wrote:

(b) (5) [redacted]

[redacted]

Thanks

Gopaul Noojibail
Acting Superintendent
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
307.739.3411

On Tue, Jul 2, 2019 at 3:22 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

Hello Sue,

I reviewed the attached briefing statement. I only have one edit: remove "draft" from the first bullet in the "Current Status" section.

I'll provide comments to the proposed skilled volunteer program document in Google docs.

Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Wed, Jun 26, 2019 at 1:18 PM Consolo-Murphy, Susan (Sue) <sue_consolo-murphy@nps.gov> wrote:

Attached is a link to the draft deliberative document on how skilled volunteers might be used to help remove mountain goats from the park.

https://docs.google.com/document/d/1hgIU4JLNXxzbAHCqJBjwbExC5Kxgsof6nynR3rS2TOs/edit?usp=sharing

Also attached is a revised draft briefing statement on the proposed plan, as we discussed at our June 18 meeting. Comments are welcome on both of these. Thanks.

Sue Consolo-Murphy
Chief, Science & Resource Management
Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
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(307) 739-3481 (w)
(307) 690-8005 (cell)
Sue_Consolo-murphy@nps.gov

Briefing Statement, Mountain Goat Management .pdf

Briefing Statement July 2019

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton NP (GRTE) and the John D. Rockefeller, Jr. Memorial Parkway (JODR), and threaten the small and declining native bighorn sheep herd and other animal and plant resources in the Teton Range.
- The NPS is developing a management plan to remove or significantly reduce the mountain goats in the next one to five years, which could be controversial. It includes the use of aerial control and potentially use of skilled volunteers to lethally remove mountain goats from the park. Managers that cost-effective removal of nonnative goats can be done within three to five years if action is promptly initiated.

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development. In recent years, sheep have declined; a December 2018 count found 82 bighorns.
- Mountain goats were first seen in the Teton Range in 1979 but only in recent years have biologists documented a rapidly increasing breeding population. Without intervention, scientists predict that the goat population could grow to 2.5-5 times the current number of approximately 100 goats.
- Mountain goats could introduce diseases to the native Teton bighorn herd. Goats in other ecosystems have also caused the decline or extirpation of native high-elevation plant populations.

Current Status:

- The NPS prepared a draft mountain goat management plan/EA that outlined strategies to significantly reduce or remove mountain goats from the Tetons, using NPS staff and skilled contractors, primarily through lethal means. Translocations of goats back into native ranges would be an option.
- Idaho and Wyoming maintain goats as a game species in other areas. The park received requests from the Wyoming Game & Fish Commission and Department and some members of the public to consider using skilled volunteers to assist in goat removal. This has been added as a management option.
- Goats are widely dispersed in high-elevation backcountry areas of the park and seldom seen by park visitors. Their potential removal would be logistically challenging and may become controversial; however, there is high interest among state and federal biologists and local constituents in conserving the native bighorn sheep herd in the Teton Range.

Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: July 15, 2019

Briefing Statements for Gopaul’s visit 7_17.pdf

From:	Martin, Erin
To:	Chip Jenkins
Cc:	Klossowsky, Michele; Gopaul Noojibail
Subject:	Briefing Statements for Gopaul"s visit 7/17
Date:	Monday, July 15, 2019 4:33:22 PM
Attachments:	GRTE Telecomm Briefing_7-12-19 Final.docx GRTE Meadow Road Briefing Statement (2019-07-12).docx GRTE Mountain Goats.pdf

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Chip,
I have attached a few briefing statements that cover some of the current issues Grand Teton National Park has been involved in.

Thank you for your time,

--
Erin Martin
Office of the Superintendent
Grand Teton National Park
PO Box 170
Moose, WY 83012
Office 307-739-3410

GRTE Telecomm Briefing_7-12-19 Final.pdf

Briefing Statement FY 2019

Bureau: National Park Service (NPS)
Issue: Telecommunications Infrastructure Plan Finding of No Significant Impact
Members: Senators Michael Enzi and John Barrasso, Congresswoman Liz Cheney
Park: Grand Teton National Park, Wyoming

Key Points:

- The park's government-owned fiber optic connection for NPS network service is failing. The cost for the NPS to replace this line would range between $3 and $5 million.
- The NPS has developed a telecommunications infrastructure plan to consider the issuance of a right-of-way permit for the installation of fiber optic network and nine wireless telecommunications facilities at developed locations within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway and connecting to Yellowstone National Park's south entrance.
- Improvements would establish mission critical internet and voice communications in high-use / high-density areas of the park and increase cellular and broadband service in areas currently having significant staff presence and/or see a high volume of visitors.
- Although some spillover of wireless signals may extend into backcountry/wilderness areas, it is not the intent of this plan to extend services into the backcountry and/or recommended wilderness; nor is it the intent to provide coverage to all road sections within the park.
- Specifically, the plan would:
    - Improve emergency services provided by the NPS and its federal/county partners, including fire, law enforcement, and medical response (including 911 emergency services).
    - Expand capacity, reliability, and reach of telecommunications to support park operations, including concessioner and partner operations.
    - Provide cellular high speed wireless voice and data coverage to further enable the NPS mission and respond to visitor expectations for connectivity.
    - Provide broadband telecommunication services for park and concessioner housing areas, vital for recruiting and retaining the next generation of employees.

Background:

- In October 2013, the park held a telecommunications meeting with representatives from Grand Teton and Yellowstone National Parks, cell phone and fiber optic providers, and Intermountain Region. The NPS requested providers develop one proposal with the capacity to expand to the south entrance of Yellowstone. In April of 2015, Grand Teton National Park received a right-of-way application from Diamond Communications to provide expanded telecommunications infrastructure within the park.
- The estimated cost of the Diamond Communications proposal is $11,050,000.

Current Status:

- An environmental assessment was completed for the proposed plan and released for a 30-day public review and comment period ending on April 10, 2019. A decision on the Finding of No Significant Impact is anticipated in July 2019.
- The DOI Office of Valuation Services and the project applicant have reached an agreement on the valuation of the proposed right-of-way on October 18, 2018, pending formal signatures.
- The NPS grants right-of-way permits only to Federal Communications Commission (FCC) licensed companies. Diamond Communications constructs and maintains telecommunications facilities for FCC licensed companies. The park submitted a policy waiver request through the NPS Intermountain Regional Office on April 24, 2019 requiring Diamond Communications to be a FCC licensee.

Contact Person: Gopaul Noojibail, Acting Superintendent, (307) 739-3410, gopaul_noojibail@nps.gov
Last Updated: July 12, 2019

GRTE Meadow Road Briefing Statement (2019-07-.pdf

Briefing Statement FY 2019

Bureau: National Park Service (NPS)
Issue: Proposed Meadow Road Paving Improvements
Members: Senators Michael Enzi and John Barrasso, Congresswoman Liz Cheney
Park: Grand Teton National Park, WY

Key Points:

- The NPS is considering the environmental impacts of paving of Meadow Road, an unpaved road located within Grand Teton National Park. The road provides year-round access to approximately 70 private properties and residences located along the park boundary and adjacent to the east bank of the Snake River. The paving improvements would meet NPS road standards. No work is being considered outside the existing disturbed roadway and shoulders.
- The park developed a model to evaluate all unpaved roads within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway to determine if roads should be considered for paving. This model incorporates methods used by other localities within Wyoming and other states, and considers a wide range of factors. Traffic volumes on Meadow Road have reached a point where the park's model - incorporating factors such as maintenance and user costs, safety, dust control, and all season trafficability - recommends consideration for paving.

Background:

1976 to 1980

- In a March 5, 1976 letter to the chairman of the Teton County Planning Commission, the park superintendent stated that Meadow Road was part of the county road system that existed prior to the establishment of the park and that the NPS is not required to meet unlimited demands for access not consistent with NPS policy and mission, but that access is guaranteed. The superintendent also stated that the park maintained the road as an unimproved, graded, gravel road, and that this fulfills the obligation of the NPS.
- In a memo-to-file dated March 31, 1980, the park assistant superintendent summarized a meeting with the Teton County Commissioners on alternatives for access to the Solitude and Meadows residential subdivisions located outside of the park boundary. The memo stated that the assistant superintendent recognized NPS' obligation to designate rights-of-way and provide access, but that the NPS did not have an obligation to construct or maintain roads for private users outside of the park.
- In 1980, an environmental assessment (EA) was prepared and a Finding of No Significant Impact was approved regarding access to the subdivisions. The decision stated the NPS will not assume any responsibility for constructing, maintaining, or snowplowing the designated right-of-way. The decision also established the current access routes for the two subdivisions.
- In an August 26, 1980 letter to a resident of the Meadows subdivision, the park superintendent stated, based on discussions with Teton County officials, Meadow Road was not part of the county road system as was previously stated by the previous park superintendent in 1976. The letter also stated that the road is considered a private road serving the subdivision.

2015 to Present

- A number of residents of the Meadow Road neighborhood have been interested in paving the unpaved road for several years. More recently, the park received a request via letter from the Meadow Road Association President, on March 23, 2015. Park leadership supported the proposal and completed the environmental compliance requirements through a categorical exclusion (CE) on May 25, 2015.
- In June 2015, the park received a letter from an attorney representing several residents of the Meadow Road neighborhood. The attorney notified the park superintendent that he was preparing to file a petition for injunctive relief with the U.S. District Court for the District of Wyoming, seeking to enjoin any actions to pave the road. The attorney outlined several objections to the park's use of a CE to comply with the environmental compliance requirements under the National Environmental Policy Act (NEPA).

- From late June to early July 2015, park leadership staff discussed the use of a CE with environmental compliance specialists at the regional and Washington offices and the Department of the Interior Office of the Solicitor. Immediately after the discussions, Park Superintendent David Vela sent a letter to the Meadow Road Association President suspended his approval of the paving project pending a further analysis of the environmental compliance process, as well as any other matters that may be relevant to a decision on paving the road.
- Discussions with a number of Meadow Road residents continued through 2017. The superintendent sent a letter to the residents on March 8, 2018. The letter provided the residents a perspective from the park's point of view and suggested a path forward to resolve the longstanding issue of whether Meadow Road should be paved or remain as a gravel road.
    - Specifically, the letter stated that although the law that established Grand Teton National Park in 1950 requires the NPS to designate and open rights-of-way to provide access to private lands, it allows the NPS to determine the terms and conditions of that access, including the location, width, and surface type of roads.
    - In the letter, the superintendent explains the evaluation process (model) which was conducted to determine whether Meadow Road should be paved. Based on the model, the park's senior staff determined that converting Meadow Road to a paved surface would serve the long-term interests of the park.
    - The letter also stated that "Meadow Road is more appropriately described as a park road located entirely on NPS-owned land that serves primarily a private purpose, that of providing access to the residents of the Meadow Road community." Regarding the authorization to potentially pave the road the letter states the park does "not believe it appropriate to authorize anyone other than the NPS to undertake the work of paving Meadow Road. Therefore, subject to a final decision informed by the completion of an appropriate NEPA process, the work of resurfacing the road would be accomplished by the park."
- On August 15, 2018, the superintendent provided an update to the Meadow Road residents on the appropriate environmental compliance pathway for the proposal to pave the road. Based on review of the environmental compliance required under NEPA, and NPS policies and procedures, the superintendent decided to prepare an EA to evaluate the environmental impacts associated with the road paving proposal.

Current Status:

- The NPS Denver Service Center (DSC) is assisting the park with the environmental compliance effort with review support from the Intermountain Regional Office Environmental Quality Division.
- Public scoping on the proposal to consider the paving of Meadow Road began on June 26 and ends on July 25.
- The park and DSC will review public scoping comments and prepare an EA which is anticipated to be ready for public review and comment this fall.

Contact Person: Gopaul Noojibail, Acting Superintendent, (307) 739-3410, gopaul_noojibail@nps.gov
Last Updated: July 12, 2019

GRTE Mountain Goats.pdf

Briefing Statement July 2019

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton NP (GRTE) and the John D. Rockefeller, Jr. Memorial Parkway (JODR), and threaten the small and declining native bighorn sheep herd and other animal and plant resources in the Teton Range.
- The NPS is developing a management plan to remove or significantly reduce the mountain goats in the next one to five years, which could be controversial. It includes the use of aerial control and potentially use of skilled volunteers to lethally remove mountain goats from the park. Managers that cost-effective removal of nonnative goats can be done within three to five years if action is promptly initiated.

Background:

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- Mountain goats could introduce diseases to the native Teton bighorn herd. Goats in other ecosystems have also caused the decline or extirpation of native high-elevation plant populations.

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- Idaho and Wyoming maintain goats as a game species in other areas. The park received requests from the Wyoming Game & Fish Commission and Department and some members of the public to consider using skilled volunteers to assist in goat removal. This has been added as a management option.
- Goats are widely dispersed in high-elevation backcountry areas of the park and seldom seen by park visitors. Their potential removal would be logistically challenging and may become controversial; however, there is high interest among state and federal biologists and local constituents in conserving the native bighorn sheep herd in the Teton Range.

Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: July 15, 2019

Mountain Goat Management Plan_EA Draft FONSI De....pdf

From:	Noon, Daniel
To:	David Gustine; Sarah Dewey; McCloskey, Kelly
Cc:	Susan (Sue) Consolo-Murphy; Gopaul Noojibail; Victoria Mates
Subject:	Mountain Goat Management Plan/EA Draft FONSI Development Follow-Up (Due August 2)
Date:	Thursday, July 25, 2019 2:50:02 PM
Attachments:	Draft Mountain Goat Management Plan EA FONSI Follow-Up Request (2019-07-25).docx DRAFT Shoshone-Bannock Tribes Mountain Goat Plan-EA Public Comments Analysis Update (2019-07-25).docx

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Hello Dave, Sarah, and Kelly,

I spoke with Gopaul and Sue this morning about the status of the Mountain Goat Management Plan/EA draft FONSI development. To stay on schedule, please complete the following by **Friday, August 2**.

1. Review the draft FONSI, especially the green highlighted sections located throughout the FONSI as they relate to the use of qualified (skilled) volunteers and mountain goat carcass disposal. Please consider revising these sections, especially statements that mention the Natural Resources Management Act and the Secretary of the Interior.
2. Resolve draft FONSI follow-up items (see attachment). I highlighted these areas of the FONSI in yellow.
3. Review the attached "DRAFT Shoshone-Bannock Tribes Mountain Goat Plan-EA Public Comments Analysis Update" and determine if NEPA-related responses are needed in the FONSI (refer to the comments I provided in the document).

To make it a little easier, I placed the latest draft FONSI on the P drive in the following location:

> **P:\Planning Office\Mtn Goat Management Plan EA\FONSI\2019-07-25 Revised Draft**

Feel free to use the version provided on the P drive or make a copy. Please provide your revisions in "track changes." I will consolidate the versions into one revised FONSI. I will then provide the revised version to the Intermountain Regional Office Environmental Quality Division (EQD) for review. I anticipate EQD will be able to provide comments by August 9.

Please let me know if you have any questions. Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

Draft Mountain Goat Management Plan EA FONSI .pdf

25 July 2019

GRTE & JODR Mountain Goat Management Plan / Environmental Assessment Draft FONSI Follow-Up Items (DUE: Friday, August 2)

1. **Selected Alternative and Rationale for the Decision: Estimated Costs of Implementation (page 7).** Provide most recent mountain goat population estimate and costs to implement the selected alternative.

2. **Public Involvement / Agency Consultation (page 8).** Provide U.S. Fish and Wildlife Service ESA section 7 consultation response letter summary.

3. **Public Involvement / Agency Consultation (page 8).** Provide a summary of the most recent tribal consultations. If necessary, revise selected action.

Responses to Substantive Public Comments

4. **History and Status of Mountain Goats: Disease status of mountain goats (page 14).** Provide a response to **comment 5** about "removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted."

5. **History and Status of Mountain Goats: Mountain goat population analysis (page 15).** Include mountain goat genetic analyses in **response 7**.

6. **Issues and Impact Topics Dismissed: Federally listed wildlife species (page 15).** Provide U.S. Fish and Wildlife Service ESA section 7 consultation response on wolverine to **response 9.**

7. **Alternatives: Alternative A (page 16).** Provide a statement regarding how the U.S. Forest Service manages mountain goats in nearby national forests in **response 11**. Consider coordinating this response with Bridger – Teton and Caribou – Targhee national forests.

8. **Alternatives: Alternative C – Transfer of mountain goats to zoos (page 16).** Should the statement "Previous relocation efforts of mountain goats (Myatt et al., Olson et al. 2010) have found low survival rates for translocated young of the year" be included in **response 12**? If the statement remains, it will likely raise additional questions, such as: How does the NPS plan to remove "adult females accompanied by young of the year" from the park knowing of the low survival rate(s) of the young?

9. **Alternatives: Alternative C – Mountain goat translocations (page 17).** Provide a response to **comment 13** about whether mountain goats could be translocated to areas where they are <u>not native</u>.

10. **Alternatives: Alternative C – Mountain goat translocations (page 17).** Provide a response to **comment 13** regarding detailed mountain goat translocation areas.

11. **Alternatives: Alternative C – Prioritize mountain goat removal locations (page 17).** Provide a response to **comment 15** about prioritizing locations for mountain goat removal (Wyoming Game and Fish Department comment).

12. **Elements Common to the Action Alternatives (B and C): Coordination (page 18).** Clarify "with respect to the latter" in **comment 19**.

13. **Elements Common to the Action Alternatives (B and C): Coordination (page 19).** Provide a response to **comment 19** about coordination with the Idaho Department of Fish and Game and the Wyoming Game and Fish Department.

14. **Conservation Measures (page 19).** Clarification is needed on **comment 22**. Is the comment from the Wyoming Department of Agriculture intended **(1)** bring up bighorn sheep management "specific conservation measures" outside of the mountain goat management plan/EA or **(2)** address the specific mitigation measures provided in the plan/EA to reduce impacts on bighorn sheep during mountain goat removal activities? If **(1)** refer to **comment 34**.

15. **Alternatives Considered but Dismissed: Public hunting in the park (page 20).** Provide a response to **comment 23** about allowing "WGFD to manage mountain goats within the park."

16. **Alternatives Considered but Dismissed: Public hunting in the park (page 20).** Replace table in **response 24** with up to three NPS examples (list park units) of where hunters are used to manage overabundant wildlife. Provide references describing these NPS unit wildlife management plans, if available.

17. **Affected Environment / Environmental Consequences: Bighorn Sheep – Bighorn sheep decline (page 22).** Consider limiting the various reasons for bighorn sheep decline in **comment 27** unless a response is prepared to address each of these reasons. Should human activity on winter range be included in the comment/response?

18. **Affected Environment / Environmental Consequences: Bighorn Sheep – Bighorn sheep decline (page 22).** Responses needed for **comment 27** on reasons for bighorn sheep decline.

19. **Affected Environment / Environmental Consequences: Bighorn Sheep – Bighorn sheep decline (page 22).** Consider either removing **comment 28** or rephrasing it by asking what would the NPS do if bighorn sheep "vanished" from the Teton Range and provide an appropriate response.

20. **Affected Environment / Environmental Consequences: Bighorn Sheep – Bighorn sheep decline (page 22).** Provide responses to **comment 29** regarding "co-existence." Note there are two different "co-existence" related comments.

21. **Affected Environment / Environmental Consequences: Bighorn Sheep – Bighorn sheep decline (page 22).** Provide response to **comment 30** regarding whether mountain goat removal would be able to stop or reduce bighorn sheep decline.

22. **Affected Environment / Environmental Consequences: Bighorn Sheep – Effect of aircraft on mountain ungulates (page 22).** Complete **comment 31** and provide a response regarding aircraft impacts on bighorn sheep and other mountain ungulates.

23. **Affected Environment / Environmental Consequences: Vegetation and Soils (page 23).** Awaiting feedback from **Kelly McCloskey** on **comment 32** regarding response from a comment about wildlife consumption of native high-elevation plants, vegetation community descriptions, mountain goat wallowing, and effects on soils and plants from the use of salt licks. **Email sent to Kelly on 24 July.**

24. **New Alternatives or Alternative Elements: Comprehensive plan for conserving bighorn sheep (page 23):** Complete list of bighorn sheep potential management actions in **comment 34**.

25. **New Alternatives or Alternative Elements: Bighorn sheep vaccinations (page 23):** Provide a response to **comment 35**.

26. **New Alternatives or Alternative Elements: Mountain goat management outside of the park (page 25):** Provide a response to **comment 39**.

27. **Other Topics: Costs / Funding (page 25):** Provide most recent mountain goat population estimate and costs to implement alternatives A and B in **response 40.**

Literature Cited

28. **Literature Cited:** Ensure all references in FONSI are listed.

DRAFT Shoshone-Bannock Tribes Mountain Goat P.pdf

DRAFT – DELIBERATIVE – INTERNAL USE ONLY

Mountain Goat Management Plan Environmental Assessment
The Shoshone – Bannock Tribes Response Letter

Substantive Comments and Potential Follow-Up

Introduction

Paragraph 1 (page 1). *In an effort to further our* ***government-to-government relationship****, the Tribes would like to reserve this issue and others for formal consultation prior to a decision being issued on this Environmental Assessment (EA).* **Tribal consultation related response.**

Paragraph 2 (page 1). *As a preliminary comment and truly the overall guiding principle for this submission, the Tribes believe that the NPS missed an opportunity to discuss the conservation of Bighorn Sheep and Mountain Goats at the programmatic level. The purpose of the document is to promote conservation measures through a Plan for alleviating stresses on this isolated population of 'at- risk' Bighorn Sheep. However, the EA is singular in its focus to identify one potential action for analysis and rely on a tenuous connection to an unknown recovery metric. The Tribes would like to see the NPS* ***focus on the true scope of the problems that face Bighorn Sheep*** *through comprehensive disease and disease transmission assessments, vegetation assessments within winter ranges, Bighorn Sheep conservation closures to winter recreation, re-introduction of fire to the ecosystem through prescribed fire, and developing collaborative solutions to providing migratory access throughout a large landscape of federal and private property. From that programmatic perspective a range of prioritized actions could be taken, with objectives that measure the efficacy of each action on the overall population of Bighorn Sheep within the Park.* **Environmental assessment related response.**

Commented [ND1]: Address in FONSI under comment/response 27 – bighorn sheep decline. Determine if specific issues brought up in the comment should be added to the list in comment/response 27.

Background

Paragraph 4 (page 2). *The Ethnographic Resources section (page 10) states the NPS contacted and consulted with tribes and they did not have any particular concerns with removing of exotic Mountain Goats or with management actions to remove, even though Tribal technical staff did voice our concerns with the action at our consultation meeting on September 24, 2018.* ***The EA does not acknowledge that the Tribes position, as clearly stated during technical consultation, is that Mountain Goats are a natural part of the ecosystem.*** *The Tribes do not view this native species to our homelands as invasive or in need of removal. From a Tribal perspective, each component resource is a part of a greater whole and the unnecessary removal of one component can have cascading effects on other species. The re-colonization of suitable habitats by native wildlife species after the extreme extirpation of game animals post-contact is often beneficial for landscapes, if appropriately managed.* **Tribal consultation related response.**

DRAFT – DELIBERATIVE – INTERNAL USE ONLY

Background – Tribes' Fish and Wildlife Department Mission Statement

Paragraph 2 (page 3). *Through holistic action implementation the Department engages each year in habitat restoration, vegetation management, technical consultation, production measures, research, monitoring and evaluation efforts for a variety of species. Using the best available science, traditional ecological knowledge, and integrated and innovative project planning the Department is able to deliver a wide-array of technical expertise for fish, wildlife, and plants. Our expertise with management of listed species and proximity to the Park make the Tribes' Fish and Wildlife Department a logical resource for project work or technical consultation/coordination on wildlife management issues. The Tribes have a significant* ***interest in developing a partnership in the management of Park wildlife resources*** *so our unique perspective can be included during planning efforts if the NPS determines that a programmatic management style is more appropriate than lethal removal of Mountain Goats.* **Tribal consultation related response.**

Specific Comments to the Environmental Assessment

Paragraph 1 (page 3). *A great deal of effort is made in this planning document to paint this particular species of wildlife as exotic, invasive and problematic, while the Tribes see its presence as a testament to its ability to recover from extirpation during westward expansion into suitable habitat. At a high level, many species across the biosphere are experiencing significant declines in population and access to habitat. While the Tribes do not dispute the information provided about the origin of this particular population, we do not agree that this history justifies the lethal removal of a species from the landscape after decades on it. Especially when* ***the EA acknowledges that the Bighorn Sheep "is facing multiple environmental stressors" but fails to evaluate anything other than the hypothesized and suggested current information that the NPS recognizes as "insufficient to quantify"****.* **Environmental assessment related response.**

Commented [ND2]: Determine if comment should be addressed in FONSI.

Paragraph 2 (page 4). *The stressors for Bighorn Sheep within the Park are clearly laid out in this document: genetic bottleneck, lack of migratory routes between regional populations and critical winter or summer ranges, disease transmission risk, diminished vegetation resources from a loss of natural fire regimes, winter recreation and so on. These issues seem like logical planning points that would serve the basis of* ***a comprehensive and programmatic conservation plan so measureable objectives could be developed*** *with long-term, prioritized strategies for NPS implementation on behalf of this population. Wildlife stressors will not be alleviated overnight, and with the advent of climate change may be exacerbated in coming decades; thereby requiring a programmatic view of recovery.* **Environmental assessment related response.**

Commented [ND3]: There is no direct mention of a "comprehensive bighorn sheep management plan" in the comment/response section of the FONSI. Determine if a response is needed.

Lethal Removal

Paragraph 1 (page 4). *Although the timeline for removal [of mountain goats] in the EA is presented as if this action were an exigency designed to halt the introduction of diseases or reduce competition for winter forage, the decline of Bighorn Sheep has been occurring for some time for reasons clearly outside of the colonization by Mountain Goats.* ***There is very little discussion about the rangewide decline of Bighorn Sheep populations or the projected benefits of removing Mountain Goats from the Park.*** **Environmental assessment related response.**

Commented [ND4]: Address in FONSI under comment/response 27 – bighorn sheep decline.

Updated 25 July 2019

Paragraph 2 (page 4). ***There is no information presented that accurately describes the resulting benefit of removing Mountain Goats to Bighorn Sheep populations, or winter forage, or the prevalence of wildlife diseases.*** *The Tribes attempt to quantify results based on reasonable objectives, such as "If the Park were 100% successful in removing Mountain Goats from the landscape, Bighorn Sheep populations would respond by X (where X represents your desired outcome as a population level response)".* **Environmental assessment related response.**

Commented [ND5]: Determine if comment should be addressed in FONSI.

Paragraph 3 (page 5). *The EA does not mention that* ***young goats will likely be orphaned or permanently separated from their family groups or that those who manage to flee the Park's eradication effort will be killed for trying to return to their home.*** **Environmental assessment related response.**

Commented [ND6]: Determine if comment should be addressed in FONSI.

Paragraph 4 (page 5). *…the Palisades and Idaho ranges near the Park host some of the most accessible Mountain Goat populations for our membership to* ***engage in subsistence hunting through our Treaty****.* **Tribal consultation related responses.**

Recreation Impacts

Paragraph 1 (page 7). *The Tribes view the potential impact from winter recreation as just as likely a culprit for Bighorn Sheep decline in the northern herd as ancillary impacts from grazing Mountain Goats. It is* ***critical to manage winter recreation*** *so that any associated benefits from actions to improve population numbers for Bighorn Sheep are maximized, or at least realized.* **Environmental assessment related response.**

Commented [ND7]: Address in FONSI under comment/response 27 – bighorn sheep decline.

Characterization of Tribal Concerns and Trust Assets

Paragraph 1 (page 7). *The Tribes view the presence of wildlife, cultural resources and landscapes, and medicinal plants within the Park as being an integral component of the trust relationship; the existence of the Park and everything within those boundaries give rise to a unique obligation of management that the Tribes should be involved in so our homeland is not subject to degradation over the years. This relationship should include* ***close coordination on issues from recreation, protection of cultural resources, information and education, and finally, ecosystem management****; all with a conservation view of the landscape that ultimately benefits the Tribes and every visitor to the Park.* **Tribal consultation related response.**

Re_ Mountain Goat Management Plan_EA Draft FONS...(4).pdf

From:	Noon, Daniel
To:	Gustine, David; Sarah Dewey
Cc:	Susan (Sue) Consolo-Murphy
Subject:	Re: Mountain Goat Management Plan/EA Draft FONSI Development Follow-Up (Due August 2)
Date:	Tuesday, August 6, 2019 12:00:22 PM

Hello Dave, Sarah, and Sue,

I reviewed the revisions to the Mountain Goat Management Plan/EA FONSI and I can accept all of the changes made. Here are the follow-up items that need to be resolved before I can send the revised draft FONSI to the regional Environmental Quality Division (EQD) for review. Please update the FONSI by **Thursday, August 8** and I'll get it ready for regional review on Friday, August 9. The revised draft FONSI is in the same location that Dave provided in his email.

1. **Sue:** We need to determine if we want to provide a direct response to "allow WGFD to manage mountain goats within the park" in **comment 23** (page 25). We can either (1) provide a carefully prepared clear and direct response (please provide) or (2) remove the specific comment and not respond. Please provide direction on how to move forward.
2. **Sarah**: Citations needed for **response 29** (page 27) regarding bighorn sheep and mountain goat habitat overlap and add additional statements to the response, if needed (**respond to question by Dave**).
3. **Dave**: The comment asked specifically for the costs to implement the other alternatives (A and B) in addition to the preferred alternatives in **comment 38** (page 30). Please provide estimated costs for the other alternatives as well.
4. **Sarah**: Revise "Whittlesey, L. H, P. D. Schullery, S. Bone, A. Klein, P. J. White, A. W. Rodman, and D. E. HallacWhittlesey et al. 2018" reference by stating whether the journal article was published or "in press."

This should be the final follow-up items needed.

Thank you!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Fri, Aug 2, 2019 at 8:31 AM Gustine, David <dave_gustine@nps.gov> wrote:

> morning Daniel-
>
> FONSI is ready for your review. We worked hard to give you the cleanest draft possible -- all edits/changes were tracked as per your request. There are a few items that need you feedback, but just a few.
>
> It's here: P:\Planning Office\Mtn Goat Management Plan EA\FONSI\2019-07-25 Revised Draft

dave

On Thu, Jul 25, 2019 at 2:49 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

Hello Dave, Sarah, and Kelly,

I spoke with Gopaul and Sue this morning about the status of the Mountain Goat Management Plan/EA draft FONSI development. To stay on schedule, please complete the following by **Friday, August 2**.

1. Review the draft FONSI, especially the green highlighted sections located throughout the FONSI as they relate to the use of qualified (skilled) volunteers and mountain goat carcass disposal. Please consider revising these sections, especially statements that mention the Natural Resources Management Act and the Secretary of the Interior.
2. Resolve draft FONSI follow-up items (see attachment). I highlighted these areas of the FONSI in yellow.
3. Review the attached "DRAFT Shoshone-Bannock Tribes Mountain Goat Plan-EA Public Comments Analysis Update" and determine if NEPA-related responses are needed in the FONSI (refer to the comments I provided in the document).

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Please let me know if you have any questions. Thanks!

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--

Dave Gustine, PhD
Supervisory Wildlife Biologist
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Moose, WY 83012
dave_gustine@nps.gov
307-739-3485

Re_ Mountain Goat Management Plan_EA Draft FONS...(3).pdf

From: Noon, Daniel
To: Gustine, David
Subject: Re: Mountain Goat Management Plan/EA Draft FONSI Development Follow-Up (Due August 2)
Date: Tuesday, August 6, 2019 12:36:09 PM

Sorry Dave,

I just closed it. Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Tue, Aug 6, 2019 at 12:20 PM Gustine, David <dave_gustine@nps.gov> wrote:

> I'm on it -- looks like you may still have doc open?
>
> On Tue, Aug 6, 2019 at 12:00 PM Noon, Daniel <daniel_noon@nps.gov> wrote:
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> > Daniel Noon

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Re_ Mountain Goat Management Plan_EA Draft FONS...(2).pdf

From:	Gustine, David
To:	Noon, Daniel
Cc:	Sarah Dewey; Susan (Sue) Consolo-Murphy
Subject:	Re: Mountain Goat Management Plan/EA Draft FONSI Development Follow-Up (Due August 2)
Date:	Tuesday, August 6, 2019 1:09:37 PM
Attachments:	Whittlesey_et_al_2018_bison, elk, history, mountain goats, pronghorn, restoration, wildlife, wolves, Yellowstone.pdf

---

3 and 4 are rectfied -- Whittlesey pub is out (see attached), so ref is good!

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Whittlesey_et_al_2018_bison, elk, history, mou.pdf

BioOne COMPLETE

Using Historical Accounts (1796–1881) to Inform Contemporary Wildlife Management in the Yellowstone Area

Authors: Lee H. Whittlesey, Paul D. Schullery, Sarah Bone, Allison Klein, P. J. White, et. al.

Source: Natural Areas Journal, 38(1) : 99-106

Published By: Natural Areas Association

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Stewardship in Action

Using Historical Accounts (1796–1881) to Inform Contemporary Wildlife Management in the Yellowstone Area

Lee H. Whittlesey[1,5]

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Yellowstone Center for Resources
P.O. Box 168
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Mammoth, WY 82190

Paul D. Schullery[1,2]
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P. J. White[1]
Ann W. Rodman[1]
David E. Hallac[1,4]

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Bozeman, MT 59715

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PO Box 426
Independence, CA 93526

[4]Cape Hatteras National Seashore and Wright Brothers National Memorial
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Manteo, NC 27954

[5] Corresponding author:
lee_whittlesey@nps.gov; (307) 344-2261

ABSTRACT: Describing historic wildlife communities is important for evaluating changes in ecosystems through time and developing contemporary objectives for conservation and restoration. The early historical record in the Greater Yellowstone Ecosystem has been analyzed many times using a small number of written accounts, with interpretations vigorously disputed among historians, scientists, and other stakeholders. We compiled a comprehensive narrative of thousands of first-hand accounts of wildlife in the ecosystem during 1796–1881, summarized them in a georeferenced relational database, and categorized and mapped output from queries to clarify conflicting past perceptions and gain insights for contemporary management issues. The historical record indicates large mammals such as bison (*Bison bison*), elk (*Cervus elaphus*), pronghorn (*Antilocapra americana*), and wolves (*Canis lupus*) were present and widespread in present-day Yellowstone National Park and the larger ecosystem prior to Euro-American colonization. However, casual observations could not be used to estimate population sizes, relative abundances, seasonal movements and migration routes, or periods of occupancy with certainty. Despite these shortcomings, the approach was useful for informing contemporary management issues regarding wolf restoration, seasonal distributions of ungulates, and whether mountain goats (*Oreamnos americanus*) were native to the Yellowstone area. Similar evaluations could be conducted elsewhere to clarify historic wildlife conditions and provide reference information for modern conservation decisions.

Index terms: bison, elk, history, mountain goats, pronghorn, restoration, wildlife, wolves, Yellowstone

INTRODUCTION

Describing the historic wildlife communities in areas now encompassed by preserves and wilderness areas is important for understanding changes in the configurations, or states, of ecosystems through time and for developing feasible, realistic objectives for modern management (Wright et al. 1933; Leopold 1941; Leopold et al. 1963; Robbins et al. 1963). Contemporary managers realize it is often impossible to recreate natural conditions prior to a reserve's establishment given subsequent changes in ecosystem states that cannot be easily reversed, increasing human population growth and land use, and warming climate and invasions by nonnative species (Cole and Yung 2010; Hobbs and Cooper 2013; Olliff et al. 2013; White et al. 2013). Nonetheless, reliable information regarding native animals and plants and the historical conditions of landscapes is still invaluable for determining a reasonable composition and scale for conservation and restoration efforts (Edmonds 2001).

The documentary record of conditions in the Greater Yellowstone Ecosystem (GYE) prior to the establishment of Yellowstone National Park (YNP) in 1872 consists almost entirely of written accounts by early Euro-American visitors. Analyses of about 20 well-known accounts prior to 1882 by several scientists, advocates, and other commentators resulted in divergent conclusions about the historical abundance, composition, and distribution of large mammals in the area. Some investigators concluded large mammals were absent or scarce, while others concluded they were abundant and widespread (Graves and Nelson 1919; Skinner 1927, 1928; Murie 1940; Koch 1941; Cole 1969; Meagher 1973; Houston 1982; Chase 1986; Mader 1989; Kay 1990, 1994; Williams 1990; Craighead 1991; Schullery and Whittlesey 1992, 2006a, 2006b; Yochim 2001). In other words, this small sample of written accounts did not provide sufficient clarity for consistent inference by investigators with varying specialties, skills, and predispositions. We sought greater clarity by compiling information from thousands of written accounts into a relational database that could be queried to make inferences

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about historical wildlife communities.

Our objectives were to evaluate if the historical database could be used to determine if the species of large mammals currently inhabiting YNP and nearby areas of the GYE were present during the 19th century and, if so, whether their spatial distributions, seasonal movements, and migration routes were similar to contemporary conditions. We also wanted to evaluate if the historical evidence provided useful information on community composition and, if so, whether the relative proportions of various species in the total community were similar to today. In addition, we evaluated some important historiographical questions such as; whether observers from different professions displayed biases or preferences for different species; whether the use of multiple accounts from a single trip produced additional evidence of wildlife sightings; and whether the use of more historical sources increased the number of sightings and opportunities for cross-checking between sources.

METHODS

The GYE is often mentioned as one of the last temperate ecosystems where native wildlife communities and the processes sustaining them are relatively intact (Keiter and Boyce 1991; White et al. 2013). The GYE encompasses approximately eight million hectares (19 million acres) in the US states of Idaho, Montana, and Wyoming, including YNP (898,317 ha; 2.2 million acres; Keiter and Boyce 1991). We gathered all recognizable accounts of mammals in the GYE during 1796–1881 by extensively searching libraries, archives, museum collections, and websites. The study period was from the beginning of the written Euro-American record in the GYE through the administrations of the YNP's first two superintendents. Shortly afterward, hunting was prohibited in the park and wildlife viewing became a significant attraction for visitors (Schullery 1997; Olliff et al. 2013).

Accounts were obtained during 1991–2015 from government exploration and survey reports; early guidebooks and journals; letters, maps, and photographs; and a wide variety of books, newspapers, and other periodical literature. Our master bibliography contains 847 entries, of which at least 511 are primary source (i.e., written at the time) documents that recorded historical observations and sightings of animals, and the rest are secondary sources that we used for support and context. Some of these narratives are as short as a single paragraph in a newspaper, while others are lengthy books or magazine articles and official government survey reports. The primary sources were written by at least 239 known authors and other authors who are unknown (most of the latter were newspaper editors and/or reporters).

Every report of wildlife evidence (e.g., visual sighting, hides, meat, tracks, antlers, sounds) or lack thereof (e.g., complaints of no game to be shot or shortage of wild meat) from each of these accounts was compiled into a lengthy chronological narrative (Whittlesey et al. 2017). The narrative includes full direct quotations of the statements, along with supporting commentary about the observer, date, location, and other relevant background information. The narrative provides all such observations, whether first-hand or derivative, and whether there was a positive account of animal presence or negative statement about the absence of animals. Accounts were quoted in full to preserve details (e.g., number, species, gender, behavior) for later investigators to independently evaluate the information.

We created a relational database in Microsoft Access software summarizing the information from each account (https://www.nps.gov/yell/learn/historyculture/upload/HistoricWildlifeObservationsFlatFile.csv). An observation was defined as animal(s) reported by one observer at a single place and time and assigned a unique identification number. We created an ArcGIS feature class to spatially locate each observation based on the precision of information provided by the observer: (1) exact location; (2) within five miles (8 km); (3) within 20 miles (32 km); or (4) within a broad region, river way, valley, or other general area. Also, each observation was tied to the source of the quotation, including author, date and/or season, observer, and publication information. We categorized mentions of animals in historical accounts as follows: assumption of animal presence; attempt to kill an animal; described parts of an animal; general comment on an animal (but not actually describing specific animal(s) at that place and time); sounds by an animal; killing of a specific animal; observation of an animal; observed sign; and a place name referring to an animal (implying the animal had at some point been observed in the area). In addition, we characterized observers according to profession, official or nonofficial status, gender, point of origin, and year(s) of their visit(s). Categories of profession were artists, businessmen, civilian officials, clergy, guides and travel support, hunters, journalists, military, native people, prospectors, ranchers, scientists, tourists, and trappers.

We queried the database to tally observations of large mammals and mapped the locations of sightings during 1796–1881. We tabulated the total number of sightings of various species by observers from different professions. To explore the utility of the database, we selected three case studies with direct implications for contemporary management. First, we evaluated the presence and distribution of bison (*Bison bison* L.), elk (*Cervus elaphus* L.), and wolves (*Canis lupus* L.) in and near present-day YNP. Several people have proclaimed these large mammals were scarce in mountainous areas of the GYE such as YNP prior to Euro-American settlement (Skinner 1927, 1928; Bailey 1930; Rush 1932; Grimm 1939; Kay 1990; Keigley and Wagner 1998; Wagner 2006). Instead, these investigators asserted large ungulates and their predators were driven into the mountains as nearby plains and valleys were usurped by human settlement and wildlife populations were decimated by commercial harvests (Graves and Nelson 1919). Based on these assertions, some people have argued bison and elk should be regulated to low numbers in YNP and/or questioned the rationale for wolf restoration, while others have disputed these views (e.g., Kay 1990; Laundré 1992; Schullery and Whittlesey 1992, 2006b; Keigley and Wagner 1998; Yochim 2001; Wagner 2006).

Second, we evaluated the presence and

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distribution of pronghorn (*Antilocapra americana* Ord) in and near present-day YNP. Human settlement and management actions such as fencing and feeding eliminated the migration of pronghorn outside YNP sometime before 1920 (Skinner 1922). By the mid-1990s, the long-term viability of the population was in jeopardy due to low abundance and the truncated and degraded winter range within the park boundary (Boccadori et al. 2008). As a result, managers sought information regarding the historical distribution and movement patterns of pronghorn to inform management actions that could facilitate their recovery. Third, we evaluated whether mountain goats (*Oreamnos americanus* de Blainville), which are native to North America, were present in or near the park historically. Since 1990, descendants of mountain goats introduced in the Absaroka and Madison mountain ranges of Montana have colonized suitable habitat within YNP and increased substantially in abundance (Lemke 2004). There are concerns about their potential impacts on alpine vegetation, as well as resource competition and disease transmission, with native bighorn sheep. National Park Service (2006) policy allows for the removal of nonnative species that interfere with native wildlife or habitats, but many people consider mountain goats valuable components of the ecosystem and have questioned whether they were present in or near YNP historically.

RESULTS

Early observers primarily mentioned larger or unfamiliar animals (Table 1), though observers with different professions somewhat focused on different animals (Table 2). Elk were the most frequently mentioned ungulate, followed by pronghorn, deer (*Odocoileus* spp.), and bison. Reports of bears (*Ursus* spp.) outnumbered those of wolves and mountain lions. With the exception of beaver (*Castor canadensis* Kuhl), which greatly interested trappers and traders in the GYE, mammals smaller than deer were mentioned less frequently. Also, tourists usually traveled on established routes through lower-elevation valleys and along waterways, which limited the viewshed for their observations. These cultural, occupational, seasonal, topographical, and other biases complicated inferences from written historical accounts mentioning wildlife and made it impossible to estimate population sizes, relative abundances, seasonal movements and migration routes, or periods of occupancy.

The accumulation and review of more historical narratives than used by previous investigators increased confidence in the reliability of inferences about historical wildlife patterns. More information sources continued to provide better resolution up to and beyond 30 source accounts. Most large ungulates and predators such as bears, bighorn sheep (*Ovis canadensis* Shaw), bison, deer, elk, moose (*Alces americanus* Clinton), and pronghorn were mentioned within a search of about 15 sources, but the discovery of less-frequently mentioned wildlife required searching many more sources. Likewise, reliable knowledge from historical accounts increased when individual observations were cross-checked with observations of other members in the same party and other parties traveling roughly the same route during approximately the same time period. For example, the eight observers on the Washburn–Langford–Doane trip during 1870 reported sightings of 0–16 wildlife species in their individual accounts. The number of times individual species were mentioned also varied substantially among observers with, for example, black and grizzly bears being mentioned between 0 and 10 times by different observers.

Queries of the database to inform the three case studies indicated bison, elk, and wolves were present and widely distributed in the GYE during 1796–1881, including the area now encompassed by YNP (Figure 1). Pronghorn were historically observed in the central region (Hayden Valley) of present-day YNP, as well as westward through the Madison headwaters, areas they have not used since the 1920s (Skinner 1922; Keating 2002). There were also many historical observations of pronghorn in the Madison and Paradise valleys located west and north of the park, with some narrative accounts suggesting they migrated from the mountainous Yellowstone area to these valleys during winter (Keating 2002; Whittlesey et al. 2017). In contrast, there were only three accounts of mountain goats in the GYE during 1864–1881, all of which appear likely to be mistaken identifications of bighorn sheep by people unfamiliar with the area (Schullery and Whittlesey 2001). Two of these accounts were from the Gallatin Mountain Range north of present-day YNP in Montana, while one was from the Mud Volcano area in the central portion of YNP.

DISCUSSION

Our approach of compiling an extensive narrative of historical accounts, summarizing them in a relational database that could be queried, and evaluating the output clarified some misperceptions about the historical wildlife community in the GYE and provided insights with direct management implications regarding contemporary issues. The approach was useful for verifying the presence of various species in space and time and, also, provided coarse information regarding the abundance of various animals (e.g., rare, dozens, hundreds, thousands). Also, many narrative accounts mentioned migration which could be included as a category in the database to identify places along historic movement pathways. However, the historical record for the GYE largely consists of brief accounts providing a glimpse of conditions on a certain day; generally, this occurred during the warmer summer months when most early visitors traveled through the area. Historic observations were not unbiased with regard to time, location, and observer and, as a result, the number of reported observations could not be used to infer detection probabilities and estimate the actual number of animals in an area. Thus, it is impossible to estimate population sizes, community composition (proportions of various species), seasonal movements and migration routes, or periods of occupancy with any certainty based on these casual, discontinuous, and infrequent observations.

The evidence indicated many large mammals such as bison, elk, pronghorn, and wolves were present and widely distributed

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Table 1. Historical observations of wildlife in the Greater Yellowstone Ecosystem during 1796–1881 by sighting type. Animals with less than 10 sightings were grouped in the "Other" category and included bat (1), bobcat (5), bushytail woodrat (1), chipmunk (8), feline (2), fisher (3), gopher (3), lynx (5), mole (4), mountain goat (5), mouse (5), pika (2), prairie dog (8), raccoon (3), and weasel (4). The species of many mammals (e.g., bear, canine) were often not specified. Mentions of unidentified animals are not included in the table.

Animal	Total	Assumed in area	Attempted to kill	Described parts	General observation	Heard sounds	Killed animal	Observed animal	Sign detected	Place name
Badger	22	1	2	1	1	0	5	4	8	0
Bear	391	48	7	42	40	2	63	123	64	2
Beaver	412	82	8	45	16	2	125	35	98	1
Bighorn sheep	281	27	10	47	31	2	41	101	20	2
Bison	475	26	5	101	44	1	75	185	37	1
Black bear	110	1	4	15	14	2	23	48	3	0
Canine	21	2	0	0	1	0	3	14	1	0
Coyote	16	1	0	0	3	4	1	6	1	0
Deer	558	55	18	101	43	3	118	176	42	2
Elk	977	56	16	278	69	17	170	292	75	4
Fox	21	2	1	0	3	0	3	12	0	0
Grizzly bear	221	7	5	35	13	6	41	93	21	0
Marmot	65	9	1	6	0	1	43	5	0	0
Marten	22	5	0	4	2	0	7	4	0	0
Mink	92	23	0	1	3	0	59	5	1	0
Moose	109	4	1	22	16	3	11	40	10	2
Mountain lion	84	2	0	8	14	22	7	20	10	1
Mule deer	113	4	2	27	17	0	30	30	3	0
Muskrat	12	0	0	2	2	0	5	3	0	0
Other	59	2	0	1	11	3	8	24	10	0
Otter	40	3	0	5	4	0	14	12	1	1
Porcupine	13	0	0	8	0	0	3	1	1	0
Pronghorn	668	30	34	105	30	1	159	295	12	2
Rabbit	47	1	1	7	3	0	13	20	1	1
Skunk	21	0	0	0	3	0	5	13	0	0
Squirrel	34	2	1	1	4	2	8	16	0	0
White-tailed deer	37	4	0	7	3	0	11	12	0	0
Wolf	80	18	0	6	6	22	2	21	5	0
Wolverine	29	1	1	5	3	0	9	8	2	0
TOTAL	5030	416	117	880	399	93	1062	1618	426	19

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Table 2. Historical sightings of wildlife in the Greater Yellowstone Ecosystem during 1796–1881 by observer type/profession. The "Business" category includes businessmen, civilian officials, clergy, and ranchers. The "Other" profession category includes guides and travel support, native peoples, and tourists. The "Other" animal category includes bat (1), bobcat (5), bushytail woodrat (1), chipmunk (8), feline (2), fisher (3), gopher (3), lynx (5), mole (4), mountain goat (5), mouse (5), pika (2), prairie dog (8), raccoon (3), and weasel (4). Mentions of unidentified animals are not included in the table.

Animal	Total	Artist	Business	Hunter	Journalist	Military	Other	Prospector	Scientist	Trapper
Badger	22	1	6	2		1	3	0	3	6
Bear	391	11	83	40	21	36	85	45	42	28
Beaver	412	1	45	7	3	28	15	9	22	282
Bighorn sheep	281	8	36	63	8	27	23	48	30	38
Bison	475	11	80	20	13	71	49	69	29	133
Black bear	110	5	26	10	6	11	16	15	11	10
Canine	21	1	1	0	1	1	1	0	3	13
Coyote	16	1	4	0	1	0	2	5	2	1
Deer	558	11	81	22	25	90	59	57	66	147
Elk	977	40	182	108	43	127	115	153	116	93
Fox	21	1	4	0	1	1	9	1	2	2
Grizzly bear	220	14	88	10	8	26	15	14	16	29
Marmot	65	4	0	0	0	0	3	0	2	56
Marten	22	1	7	0	0	3	3	1	2	5
Mink	92	1	4	2	1	2	1	0	2	79
Moose	109	15	25	6	9	7	12	7	23	5
Mountain lion	84	2	28	5	7	17	6	1	15	3
Mule deer	113	2	19	18	0	13	13	15	25	8
Muskrat	12	1	2	0	1	3	0	0	0	5
Other	59	2	7	4	5	9	4	10	14	4
Otter	40	2	3	1	1	16	1	1	2	13
Porcupine	13	1	0	0	0	5	0	0	6	1
Pronghorn	668	10	123	52	17	41	74	65	73	213
Rabbit	47	2	12	3	2	4	7	6	10	1
Skunk	21		8	2	0	0	4	0	5	2
Squirrel	34	1	4	5	7	9	3	0	3	2
White-tailed deer	37	1	5	4	1	1	5	5	10	5
Wolf	80	1	17	2	5	10	9	20	10	6
Wolverine	29	2	7	2	0	4	1	2	7	4
Total	5029	153	907	388	186	563	538	549	551	1194

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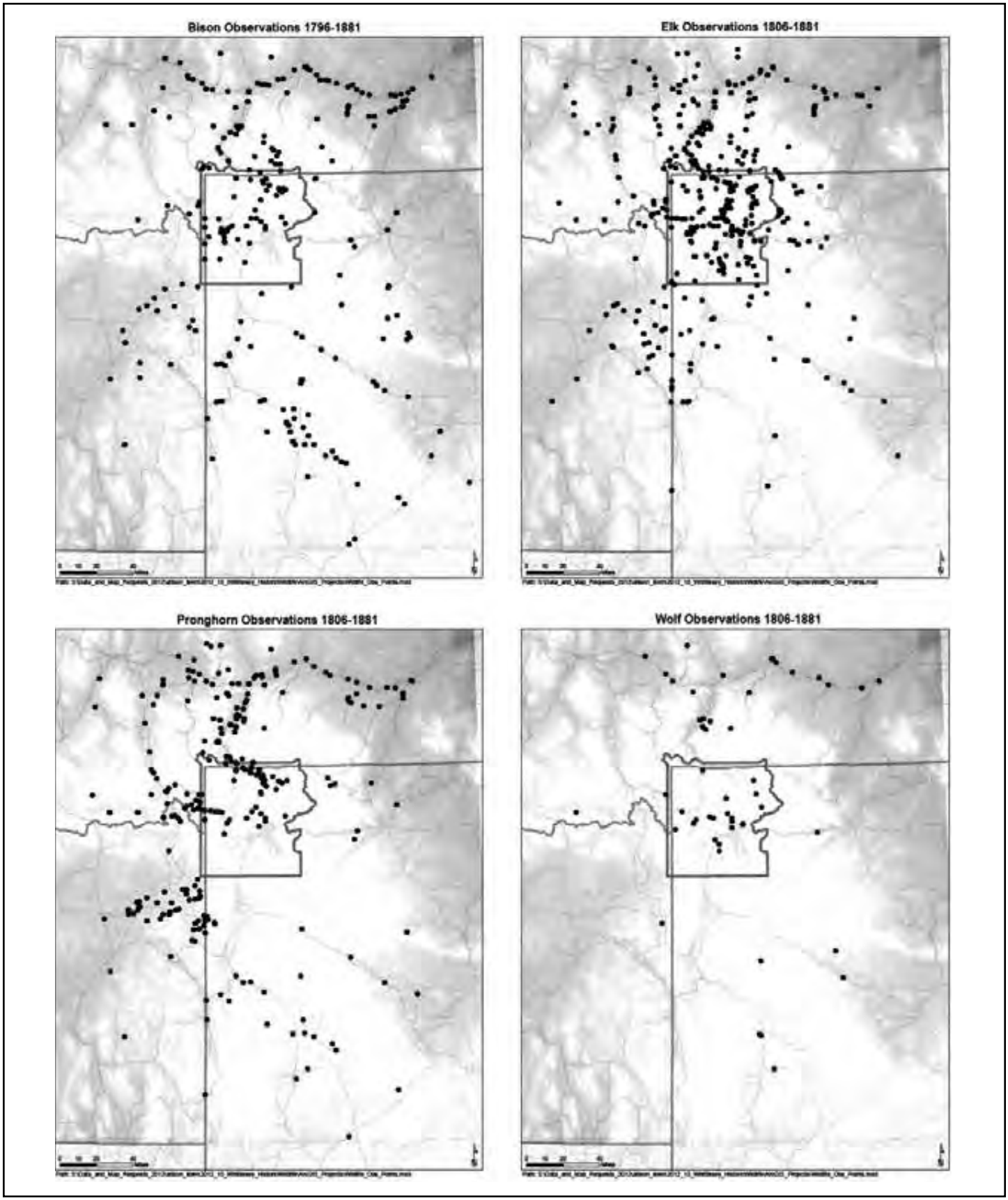

Figure 1. Historical observations of bison, elk, pronghorn, and wolves in the Greater Yellowstone Ecosystem during 1796–1881. The green line depicts Yellowstone National Park, while the gray lines are the boundaries of Idaho, Montana, and Wyoming.

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in the present-day YNP and surrounding portions of the GYE during 1796–1881, including mountainous habitats prior to settlement of the region by Euro-Americans. Thus, the previous conclusions of some writers that bison, elk, and wolves were historically scarce in YNP prior to 1890 should be questioned and reconsidered. Also, we detected seasonal areas used historically by pronghorn in the central and northern portions of present-day YNP and outlying valleys (e.g., Hayden, Madison, and southern Paradise), which enabled federal and state managers to collaborate with nongovernmental organizations such as the National Parks Conservation Association, which works with landowners to remove fencing and facilitate the reestablishment of pronghorn movements through or into some of these areas (see https://www.npca.org/advocacy/68-saving-pronghorn-at-yellowstone-national-park). Furthermore, the historical evidence (or lack thereof) was insightful for evaluating whether mountain goats were actually present in the area now encompassed by YNP. The lack of reliable historical observations suggests mountain goats were probably not living in the area, but if they were present, they were rare and secluded.

The compilation and summary of extensive narrative accounts in a relational database reduced observer bias, facilitated the evaluation of numerous accounts from diverse sources, and should be applicable to other similar information sets from other regions. The use of a much larger body of material than used by previous investigators increased confidence in the reliability of inferences about historical wildlife patterns and was useful for contemporary management in clarifying native versus nonnative species, as well as identifying seasonal use areas no longer occupied by various species in contemporary times. Future work, following review, will culminate in our methods, discussion, and conclusions being published in a two-volume book that includes an 80-page bibliography.

Lee H. Whittlesey is Historian for Yellowstone National Park and author of 12 books and 30 journal articles.

Paul D. Schullery, formerly a technical writer for the Yellowstone Center for Resources, National Park Service, at Yellowstone National Park, is a retired professional historian in Bozeman, Montana, who is now affiliated with Montana State University as a resident scholar.

Sarah D. Bone is a National Park Service ranger at Manzanar National Historic Site, California. She worked in Yellowstone National Park for four years as both an interpretive park ranger and a cartographic technician.

Allison Klein is a self-employed computer specialist in Bozeman, Montana, who works part-time for the National Park Service at Yellowstone National Park.

P.J. White is Chief of the Wildlife and Aquatic Resources Division of the Yellowstone Center for Resources, National Park Service, Yellowstone National Park, and the lead author of the recent Harvard University Press book Yellowstone's Wildlife in Transition (2013).

Ann W. Rodman is Chief of the GIS and Spatial Analysis Division of the Yellowstone Center for Resources, National Park Service, Yellowstone National Park.

David E. Hallac works for the National Park Service as the Chief of the Outer Banks Group (Park Superintendent) at Cape Hatteras National Seashore and Wright Brothers National Memorial, North Carolina, and previously worked at the Yellowstone Center for Resources as its Director, Yellowstone National Park, Wyoming.

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Re_ Mountain Goat Management Plan_EA Draft FONS...(1).pdf

From:	Noon, Daniel
To:	Gustine, David
Cc:	Sarah Dewey; Susan (Sue) Consolo-Murphy
Subject:	Re: Mountain Goat Management Plan/EA Draft FONSI Development Follow-Up (Due August 2)
Date:	Tuesday, August 6, 2019 1:48:10 PM

Thanks Dave,

I'll start accepting changes for the next draft version of the FONSI and will await Sue's response on the first follow-up item.

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Tue, Aug 6, 2019 at 1:09 PM Gustine, David <dave_gustine@nps.gov> wrote:

> 3 and 4 are rectfied -- Whittlesey pub is out (see attached), so ref is good!
>
> On Tue, Aug 6, 2019 at 12:00 PM Noon, Daniel <daniel_noon@nps.gov> wrote:
>
> > Hello Dave, Sarah, and Sue,
> >
> > I reviewed the revisions to the Mountain Goat Management Plan/EA FONSI and I can accept all of the changes made. Here are the follow-up items that need to be resolved before I can send the revised draft FONSI to the regional Environmental Quality Division (EQD) for review. Please update the FONSI by **Thursday, August 8** and I'll get it ready for regional review on Friday, August 9. The revised draft FONSI is in the same location that Dave provided in his email.
> >
> > 1. **Sue:** We need to determine if we want to provide a direct response to "allow WGFD to manage mountain goats within the park" in **comment 23** (page 25). We can either (1) provide a carefully prepared clear and direct response (please provide) or (2) remove the specific comment and not respond. Please provide direction on how to move forward.
> > 2. **Sarah**: Citations needed for **response 29** (page 27) regarding bighorn sheep and mountain goat habitat overlap and add additional statements to the response, if needed (**respond to question by Dave**).
> > 3. **Dave**: The comment asked specifically for the costs to implement the other alternatives (A and B) in addition to the preferred alternatives in **comment 38** (page 30). Please provide estimated costs for the other alternatives as well.
> > 4. **Sarah**: Revise "Whittlesey, L. H, P. D. Schullery, S. Bone, A. Klein, P. J. White, A. W. Rodman, and D. E. HallacWhittlesey et al. 2018" reference by stating whether the journal article was published or "in press."
> >
> > This should be the final follow-up items needed.
> >
> > Thank you!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Fri, Aug 2, 2019 at 8:31 AM Gustine, David <dave_gustine@nps.gov> wrote:

morning Daniel-

FONSI is ready for your review. We worked hard to give you the cleanest draft possible --all edits/changes were tracked as per your request. There are a few items that need you feedback, but just a few.

It's here: P:\Planning Office\Mtn Goat Management Plan EA\FONSI\2019-07-25 Revised Draft

dave

On Thu, Jul 25, 2019 at 2:49 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

Hello Dave, Sarah, and Kelly,

I spoke with Gopaul and Sue this morning about the status of the Mountain Goat Management Plan/EA draft FONSI development. To stay on schedule, please complete the following by **Friday, August 2**.

1. Review the draft FONSI, especially the green highlighted sections located throughout the FONSI as they relate to the use of qualified (skilled) volunteers and mountain goat carcass disposal. Please consider revising these sections, especially statements that mention the Natural Resources Management Act and the Secretary of the Interior.
2. Resolve draft FONSI follow-up items (see attachment). I highlighted these areas of the FONSI in yellow.
3. Review the attached "DRAFT Shoshone-Bannock Tribes Mountain Goat Plan-EA Public Comments Analysis Update" and determine if NEPA-related responses are needed in the FONSI (refer to the comments I provided in the document).

To make it a little easier, I placed the latest draft FONSI on the P drive in the following location:

P:\Planning Office\Mtn Goat Management Plan EA\FONSI\2019-07-25 Revised Draft

Feel free to use the version provided on the P drive or make a copy. Please provide your revisions in "track changes." I will consolidate the versions into one revised FONSI. I will then provide the revised version to the Intermountain Regional Office Environmental Quality Division (EQD) for review. I anticipate EQD will be able to provide comments by August 9.

Please let me know if you have any questions. Thanks!

Daniel Noon
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--

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--

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307-739-3485

Re_ Mountain Goat Management Plan_EA Draft FONS....pdf

From:	Dewey, Sarah
To:	Gustine, David
Cc:	Noon, Daniel; Susan (Sue) Consolo-Murphy
Subject:	Re: Mountain Goat Management Plan/EA Draft FONSI Development Follow-Up (Due August 2)
Date:	Wednesday, August 7, 2019 1:45:30 PM

Hi Daniel,

The citation noted in my comment are no longer needed. I wrote that as a note to myself - this was before Dave finished the response. I believe Dave and I have addressed everything now.

Sarah

Sarah

On Tue, Aug 6, 2019 at 1:09 PM Gustine, David <dave_gustine@nps.gov> wrote:

> 3 and 4 are rectfied -- Whittlesey pub is out (see attached), so ref is good!
>
> On Tue, Aug 6, 2019 at 12:00 PM Noon, Daniel <daniel_noon@nps.gov> wrote:
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> > I reviewed the revisions to the Mountain Goat Management Plan/EA FONSI and I can accept all of the changes made. Here are the follow-up items that need to be resolved before I can send the revised draft FONSI to the regional Environmental Quality Division (EQD) for review. Please update the FONSI by **Thursday, August 8** and I'll get it ready for regional review on Friday, August 9. The revised draft FONSI is in the same location that Dave provided in his email.
> >
> > 1. **Sue:** We need to determine if we want to provide a direct response to "allow WGFD to manage mountain goats within the park" in **comment 23** (page 25). We can either (1) provide a carefully prepared clear and direct response (please provide) or (2) remove the specific comment and not respond. Please provide direction on how to move forward.
> > 2. **Sarah**: Citations needed for **response 29** (page 27) regarding bighorn sheep and mountain goat habitat overlap and add additional statements to the response, if needed (**respond to question by Dave**).
> > 3. **Dave**: The comment asked specifically for the costs to implement the other alternatives (A and B) in addition to the preferred alternatives in **comment 38** (page 30). Please provide estimated costs for the other alternatives as well.
> > 4. **Sarah**: Revise "Whittlesey, L. H, P. D. Schullery, S. Bone, A. Klein, P. J. White, A. W. Rodman, and D. E. HallacWhittlesey et al. 2018" reference by stating whether the journal article was published or "in press."
> >
> > This should be the final follow-up items needed.
> >
> > Thank you!
> >
> > Daniel Noon
> > Chief of Planning and Environmental Compliance
> > Grand Teton National Park

John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Fri, Aug 2, 2019 at 8:31 AM Gustine, David <dave_gustine@nps.gov> wrote:

morning Daniel-

FONSI is ready for your review. We worked hard to give you the cleanest draft possible --all edits/changes were tracked as per your request. There are a few items that need you feedback, but just a few.

It's here: P:\Planning Office\Mtn Goat Management Plan EA\FONSI\2019-07-25 Revised Draft

dave

On Thu, Jul 25, 2019 at 2:49 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

Hello Dave, Sarah, and Kelly,

I spoke with Gopaul and Sue this morning about the status of the Mountain Goat Management Plan/EA draft FONSI development. To stay on schedule, please complete the following by **Friday, August 2**.

1. Review the draft FONSI, especially the green highlighted sections located throughout the FONSI as they relate to the use of qualified (skilled) volunteers and mountain goat carcass disposal. Please consider revising these sections, especially statements that mention the Natural Resources Management Act and the Secretary of the Interior.
2. Resolve draft FONSI follow-up items (see attachment). I highlighted these areas of the FONSI in yellow.
3. Review the attached "DRAFT Shoshone-Bannock Tribes Mountain Goat Plan-EA Public Comments Analysis Update" and determine if NEPA-related responses are needed in the FONSI (refer to the comments I provided in the document).

To make it a little easier, I placed the latest draft FONSI on the P drive in the following location:

P:\Planning Office\Mtn Goat Management Plan EA\FONSI\2019-07-25 Revised Draft

Feel free to use the version provided on the P drive or make a copy. Please provide your revisions in "track changes." I will consolidate the versions into one revised FONSI. I will then provide the revised version to the Intermountain Regional Office Environmental Quality Division (EQD) for review. I anticipate EQD will be able to provide comments by August 9.

Please let me know if you have any questions. Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
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Sarah Dewey, Wildlife Biologist
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Re_ GRTE_JODR Mountain Goat Management Plan_EA ...(3).pdf

From:	Noon, Daniel
To:	Susan (Sue) Consolo-Murphy
Cc:	David Gustine; Sarah Dewey
Subject:	Re: GRTE/JODR Mountain Goat Management Plan/EA Draft FONSI Review Request (PEPC 47959)
Date:	Thursday, August 8, 2019 1:17:14 PM
Attachments:	Draft Mountain Goat Management Plan EA FONSI (2019-08-08).docx

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Hi Sue,

I realize that you may not have had the opportunity to review the revised draft Mountain Goat Management Plan/EA FONSI. No worries, we still have about two weeks to provide revisions. I just wanted to provide it to the regional Environmental Quality Division so they can begin to review it as well.

Attached is the latest version of the document. Feel free to provide revisions via "track changes" and contact me if you have any questions.

Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Thu, Aug 8, 2019 at 1:13 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

> Hello,
>
> The Grand Teton National Park (GRTE) and John D. Rockefeller, Jr. Memorial Parkway (JODR) Mountain Goat Management Plan / Environmental Assessment Finding of No Significant Impact (FONSI) is ready for regional Environmental Quality review.
>
> The draft FONSI is located at the top of the Internal Documents list of PEPC 47959. The document adheres to the guidance in the 2015 NPS NEPA Handbook and related supplements.
>
> Please contact me if you have any questions or wish to discuss the document.
>
> Thank you.
>
> Daniel Noon
> Chief of Planning and Environmental Compliance
> Grand Teton National Park
> John D. Rockefeller, Jr. Memorial Parkway
> (307) 739-3465
> Email: daniel_noon@nps.gov

Draft Mountain Goat Management Plan EA FONSI _1.pdf

DRAFT

[redacted]

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

_____

Gopaul Noojibail Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

_____

[NAME] Date
Regional Director
DOI Unified Region 7 – Upper Colorado Basin

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INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. To the extent necessary, relevant sections of the EA are incorporated by reference below.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) with modifications to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities.

The selected alternative will implement a management plan to remove non-native mountain goats from the park using a combination of non-lethal and lethal removal methods.

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction efforts via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition from intensive to tactical monitoring and removal. Tactical monitoring and removal efforts will occur year round.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is

uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring will continue and it may be necessary to employ several monitoring methods simultaneously in combination. Removal efforts will likely be ground-based and tactical.

LIVE CAPTURE AND TRANSLOCATION

Mountain goats will be captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will work closely with appropriate state wildlife and federal land management agencies or other approved recipients to plan and execute the translocations. Recipients will generally be responsible for transport and associated costs to move mountain goats from frontcountry staging areas within the park to release sites outside of the park. Mountain goats could be captured over the course of 3−5 years, with most activity occurring within the first 1−2 years. Capture operations will occur between December and March. Captured mountain goats will be transported by helicopter to frontcountry staging areas, where they will be transferred to approved recipients. Capture and translocation is projected to involve approximately 32% of the 125 mountain goats. However, the number of mountain goats captured and translocated could be more or less, depending on capture success and the interest from outside entities to receive mountain goats and their ability to cover transport, disease testing, and associated expenses.

Live capture operations will occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats will be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath the helicopter in a transport bag to a frontcountry staging area. NPS personnel will coordinate with Wyoming Game and Fish Department (WGFD) personnel and others to facilitate the transfer of mountain goats to recipients. Recipients will be responsible for acquiring transport or other permits as necessary. In accordance with standard operating procedures, NPS Management Policies, the Animal Welfare Act, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the American Veterinary Medical Association (AVMA). After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park. Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.

When translocation and lethal removal activities occur in the same management period, live capture and translocation activities will generally occur prior to lethal removal. This order of actions is desirable because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and a significant portion of the population is in terrain where capture can be achieved safely. As the removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. As capture operations progress, the goats are likely to shift their distribution to areas of rougher terrain where safe capture is difficult. If capture efficiency exceeds typical effort for capturing goats (2014−2016 =

2.5 hours/goat), helicopter-supported translocation operations will cease, and shift to lethal removal techniques.

LETHAL REMOVAL

Aerial-based lethal removal will be performed by federal personnel or contractors with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Mountain goats will be removed using firearms with non-lead ammunition from aerial- or the ground-based efforts. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats will be captured and euthanized. Aerial capture techniques will include darting or net-gunning from a helicopter. Ground-capture techniques will include ground darting or baiting goats to a drop net, clover trap, or snare. Aerially-captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot). Those captured using ground techniques will be dispatched on site. Animals will be dispatched by trained personnel following established and approved guidelines from the AVMA.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will also be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with the NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals

Operations Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially-based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

USE OF QUALIFIED VOLUNTEERS

The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved, but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures.

MOUNTAIN GOAT MONITORING

Monitoring activities will include temporary capture (helicopter based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, as well as possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards the natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During the aerial survey, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following established and approved capture and handling protocols. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries and baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. For example, given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter. Capture with transport will involve two backcountry landings per animal–one to pick the animal up and one to return it to its capture location.

EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

NPS wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

ESTIMATED COSTS OF IMPLEMENTATION

Based on the current mountain goat population estimate within the park (approx. 125 individuals), the estimated costs, in 2019 dollars, to implement the following phases of alternative C, as described on pages 2–3, are approximately $440,000 for the population reduction phase (68% lethal aerial removal, 16% lethal ground removal, and 16% translocation; years 1–5), approximately $64,000 for the post-reduction phase (years 6–7), and $21,000 annually for the maintenance phase (year 7 and beyond).

Rationale

Alternative C with modifications was selected because it best meets the purpose to:

- Aid in the conservation of a native population of Rocky Mountain bighorn sheep located within the park and
- Protect other park resources and values from the rapidly growing non-native mountain goat population.

The EA sufficiently addressed impacts to park resources resulting from ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. The EA was made available for public review and comment during a 30-day period from December 4–20, 2018 and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018 via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have "no potential to cause effect" on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park's determination via email response on April 9, 2018.

The park obtained a current species listed (dated June 29, 2019) from the Information Planning and Conservation (IPaC) website. In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. The USFWS was notified via email of a forthcoming request for informal consultation on this EA on July 8, 2019 and the Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS's understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park's "may affect, not likely to adversely affect" determination for federally listed species and designated critical habitat. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018 to solicit comments and concerns. Park leadership met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018 to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho

Tribes, Coeur D'Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during the implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identified 10 criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the criteria.

The following impact topics were dismissed in the EA because they were found to have no potential for significant impacts: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils, whitebark pine, and wilderness character; however, no potential for significant adverse impacts was identified.

Implementing the selected alternative will have short-term disruptions (several minutes to hours) of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat. Overall, the effects are expected to be beneficial, effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats.

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased, though not as rapidly when utilizing only lethal removal techniques. Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of

mountain goat carcasses. These carcasses will likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

ERRATA

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods. This revision does not change the effect of the analysis.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≥20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the undeveloped quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact would diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA:

Stafl, N. and M. I. O'Connor. 2015. American Pikas' (*Ochotona princeps*) Foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

RESPONSE TO SUBSTANTIVE PUBLIC COMMENTS

Response to public comments addresses substantive comments that were received during the public review period. Many comments addressed issues already adequately covered in the EA. Other comments addressed include mountain goat translocation, the use of qualified volunteers, mountain goat carcasses, and bighorn sheep management.

Several comments proposed the reconsideration of alternatives that were considered but dismissed. After receiving considerable public feedback, the preferred alternative was modified to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities. No changes were made in the assessment of environmental consequences.

The park only responded to substantive public comments; those comments and responses are provided below.

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in Campfires in the Canadian Rockies by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region. Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population. The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to "evaluate the species' current or potential impact on park resources." As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, and has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range, NPS policy is clear on the management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive

for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (of which is stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Because wolverine are a proposed species and not formally listed for protection under the ESA, the USFWS will not evaluate the park's assessment of the potential impacts to this species. However, on page 24 of the mountain goat management plan/EA, specific conservation measures are listed and aimed at reducing potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats.

Alternative C

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors would attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) whenever possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother. Placing adult mountain goats in zoos is not being considered.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS is actively evaluating options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after the recent efforts (2018–19) in Olympic National Park, as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. A tiered system of removals could unnecessarily extend time required to remove mountain goats from the Teton Range, thus was not incorporated into the use of qualified volunteers

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: The NPS plans to use firearms silencers whenever feasible, which would most likely include ground-based removals when visitors may be impacted by sounds of gunfire (e.g., uncommon removal of a goat during summer).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

Mitigation is an integral part of the environmental planning process that involves identifying measures to reduce, minimize, or correct impacts from the proposed action. In the plan the NPS has referred to mitigation measures as conservation measures. These measures or actions are intended to reduce the potential for adverse impacts on individual bighorn sheep and the population as a whole.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. This dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would be needed to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting, while the other NPS units generally allow hunting. Qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave national parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park and Grand Canyon National Park have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. Several National Battlefields and Historic Sites utilize professional sharpshooters to remove white-tailed deer. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates.

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified (see page 5). The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment “in such a manner and by such means as will leave them unimpaired” for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by the nativity (or non-nativity) of the mountain goat population(s) in question. In areas where mountain goats and bighorn sheep are naturally sympatric, both species may indeed coexist with expected “natural” population fluctuations because competitive overlap is limited by partitioning of habitats (niche). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goats populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on wildlife consumption of native high-elevation plants, vegetation community descriptions, mountain goat wallowing, and effects on soils and plants from the use of salt licks.

Response 30: The commenter correctly pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both Mountain goats and Bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep. The commenter also pointed out typos, caused by auto-correct, in scientific names of some native plants, and a different opinion on which forbs would be considered "tall" and commented on the degree of analysis of the effects of salt licks. While these final three comments are all valid, the adjustments suggested by the commenter, if made, would not change the impact analysis.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental

organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, then a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (See Response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would

continue to negatively impact park resources and values, including bighorn sheep and wilderness character.

Hunting outside the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their shift in management philosophy on management of mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Costs/Funding

Comment 38: Several commenters inquired as to the cost to implement each alternative and the sources of funding for each. One commenter was particularly interested in costs associated with live-capture of mountain goats to and transporting them to frontcountry processing sites.

Response 38: For Alternative A (no action), estimated costs to capture and monitor at least 10 goats/year the park would be approximately $8,500/goat (capture = $6,000/goat and GPS radio

collar = $2,500/collar), at least $2,000 of fixed wing time annually to aerially monitor goats in the summer, as well as approximately $10,000 in administrative costs at annual estimated cost of $97,000 for as long as park could commit to an effective monitoring program. For Alternative B (lethal control), estimated costs to lethally remove all goats would be approximately $300/goat (including carcass removal of half the goats killed), $22,000 of fixed wing time to assist and monitor removal efforts, as well as approximately $10,000 in administrative costs at an estimated cost of $66,000 for the first year of implementation with approximately 90% of population removed. For implementation of Alternative C, please see the "Estimated Costs of Implementation" section on page 7.

Other mountain goat populations

Comment 39: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 39: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 40: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 40: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

The Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was not referenced in the mountain goat management plan/EA because the NPS plan did not propose

any actions related to the interaction of these two species. This group and the recommendations outlined in the plan focus on issues of concern related to interactions between bighorn sheep and domestic sheep.

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APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archaeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the Cultural Resources Program Manager for record keeping purposes and to pursue archaeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archaeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park archaeologist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources. See Cultural Resources mitigation measures for additional requirements.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored throughout the season and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.

- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.

- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)
- Volunteers will ensure carcass or gut piles are >100 yards from trails, campsites, camping zones, cabins, etc. If this is not practical, skilled volunteers will report the location of any remains to NPS so a temporary closure can be implemented.

Appendix B: NON-IMPAIRMENT DETERMINATION

Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in

relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in the number of predators and scavengers for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep such a response if not anticipated for several reasons. Scavenger and predator populations typically increase via immigration (individuals moving into an area) or demographically (food surplus leading to improved condition of adults, larger litters, and higher survival of offspring). In mid-winter, the

wolverine is the species most likely to be present in the high elevations of the project area where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because mountain goats and bighorn sheep currently occur in spatially distinct areas and the availability of carrion may divert predation away from live prey. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Though mountain goat removal activities under the selected alternative will result in short-term adverse impacts from disturbance and displacement, bighorn sheep at the population level will not be adversely impacted. Therefore, it has been determined that the selected alternative will not result in an impairment to bighorn sheep.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Though mountain goat removal activities will result in short-term adverse impacts from disturbance to vegetation and soils in discrete areas of the park, the selected alternative will not result in an impairment on vegetation and soils.

Wilderness Character

Under the selected alternative, field activities that involve the removal of mountain goats will likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats will continue for a period of 20 or more years. These removal activities will have a negative effect on the untrammeled quality of wilderness. There will be a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. There will be a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. There will be a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other

field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character (collectively the wilderness qualities described above) will be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact will diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

Though mountain goat removal activities will result in adverse impacts on the untrammeled, undeveloped and solitude or primitive and unconfined recreation qualities of wilderness, the selected alternative will not result in an impairment on wilderness character.

Conclusion

As guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the superintendent's professional judgment that implementation of the selected alternative will not constitute impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. This conclusion is based on consideration of the park's purpose and significance, a thorough analysis of the environmental impacts described in the EA, comments provided by the public and others, and the professional judgment of the decision maker guided by the direction of NPS Management Policies (2006).

Re_ GRTE_JODR Mountain Goat Management Plan_EA ...(2).pdf

From:	Rice, Heather
To:	Noon, Daniel
Cc:	Dan Niosi; Nida Shaheen; Susan (Sue) Consolo-Murphy; David Gustine; Sarah Dewey
Subject:	Re: GRTE/JODR Mountain Goat Management Plan/EA Draft FONSI Review Request (PEPC 47959)
Date:	Friday, August 9, 2019 12:15:46 PM
Attachments:	Draft Mountain Goat Management Plan EA FONSI (2019_08_08) IMR EQ Rice Comments 8-9-19.docx

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Hi Daniel,

I've finished my review of this FONSI. This was a very nicely written document so thank you to you and your team! I've uploaded my comments to PEPC and have also attached them below. Please let me know if you have any questions or disagree with any of my comments.

Cheers,
Heather
****

Heather Rice
NEPA Specialist, Environmental Quality Division
Intermountain Region, National Park Service
12795 West Alameda Parkway | Denver, CO 80228
303-969-2975 office | 303-969-2717 fax
heather_rice@nps.gov | IMR-EQ Sharepoint Site

Have you seen the 2015 NPS NEPA Handbook??
Click here to check it out!

Plato on NEPA: "The beginning is the most important part of the work."

On Thu, Aug 8, 2019 at 1:13 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

> Hello,
>
> The Grand Teton National Park (GRTE) and John D. Rockefeller, Jr. Memorial Parkway (JODR) Mountain Goat Management Plan / Environmental Assessment Finding of No Significant Impact (FONSI) is ready for regional Environmental Quality review.
>
> The draft FONSI is located at the top of the Internal Documents list of PEPC 47959. The document adheres to the guidance in the 2015 NPS NEPA Handbook and related supplements.
>
> Please contact me if you have any questions or wish to discuss the document.
>
> Thank you.
>
> Daniel Noon
> Chief of Planning and Environmental Compliance
> Grand Teton National Park
> John D. Rockefeller, Jr. Memorial Parkway
> (307) 739-3465
> Email: daniel_noon@nps.gov

Draft Mountain Goat Management Plan EA FONSI _2.pdf

DRAFT

[redacted]

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins~~**[NAME]**~~ Date
Acting Regional Director, NPS Intermountain Region
DOI Unified Region 7 – Upper Colorado Basin

Commented [h1]: Stay tuned…we're still checking on how this needs to be written.

DRAFT

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DRAFT

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. To the extent necessary, relevant sections of the EA are incorporated by reference below.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) with modifications to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities.

Commented [h2]: Per Section 4.7 of the NPS NEPA Handbook, briefly describe the reasons for the changes and whether and how the changes alter the impact analysis that was included in the EA. Also make sure these changes are noted in the attached Errata.

The selected alternative will implement a management plan to remove non-native mountain goats from the park using a combination of non-lethal and lethal removal methods.

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction efforts via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition from intensive to tactical monitoring and removal. Tactical monitoring and removal efforts will occur year round.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is

uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring will continue and it may be necessary to employ several monitoring methods simultaneously in combination. Removal efforts will likely be ground-based and tactical.

LIVE CAPTURE AND TRANSLOCATION

Mountain goats will be captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will work closely with appropriate state wildlife and federal land management agencies or other approved recipients to plan and execute the translocations. Recipients will generally be responsible for transport and associated costs to move mountain goats from frontcountry staging areas within the park to release sites outside of the park. Mountain goats could be captured over the course of 3−5 years, with most activity occurring within the first 1−2 years. Capture operations will occur between December and March. Captured mountain goats will be transported by helicopter to frontcountry staging areas, where they will be transferred to approved recipients. Capture and translocation is projected to involve approximately 32% of the 125 mountain goats. However, the number of mountain goats captured and translocated could be more or less, depending on capture success and the interest from outside entities to receive mountain goats and their ability to cover transport, disease testing, and associated expenses.

Live capture operations will occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats will be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath the helicopter in a transport bag to a frontcountry staging area. NPS personnel will coordinate with Wyoming Game and Fish Department (WGFD) personnel and others to facilitate the transfer of mountain goats to recipients. Recipients will be responsible for acquiring transport or other permits as necessary. In accordance with standard operating procedures, NPS Management Policies, the Animal Welfare Act, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the American Veterinary Medical Association (AVMA). After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park. Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.

When translocation and lethal removal activities occur in the same management period, live capture and translocation activities will generally occur prior to lethal removal. This order of actions is desirable because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and a significant portion of the population is in terrain where capture can be achieved safely. As the removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. As capture operations progress, the goats are likely to shift their distribution to areas of rougher terrain where safe capture is difficult. If capture efficiency exceeds typical effort for capturing goats (2014−2016 =

2.5 hours/goat), helicopter-supported translocation operations will cease, and shift to lethal removal techniques.

LETHAL REMOVAL

Aerial-based lethal removal will be performed by federal personnel or contractors with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Mountain goats will be removed using firearms with non-lead ammunition from aerial- or the ground-based efforts. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats will be captured and euthanized. Aerial capture techniques will include darting or net-gunning from a helicopter. Ground-capture techniques will include ground darting or baiting goats to a drop net, clover trap, or snare. Aerially-captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot). Those captured using ground techniques will be dispatched on site. Animals will be dispatched by trained personnel following established and approved guidelines from the AVMA.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will also be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with the NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals

Operations Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially-based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

USE OF QUALIFIED VOLUNTEERS

The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

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CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

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TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved, but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures.

MOUNTAIN GOAT MONITORING

Monitoring activities will include temporary capture (helicopter based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, as well as possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards the natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During the aerial survey, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following established and approved capture and handling protocols. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries and baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. For example, given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter. Capture with transport will involve two backcountry landings per animal–one to pick the animal up and one to return it to its capture location.

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EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

NPS wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

ESTIMATED COSTS OF IMPLEMENTATION

Based on the current mountain goat population estimate within the park (approx. 125 individuals), the estimated costs, in 2019 dollars, to implement the following phases of alternative C, as described on pages 2–3, are approximately $440,000 for the population reduction phase (68% lethal aerial removal, 16% lethal ground removal, and 16% translocation; years 1–5), approximately $64,000 for the post-reduction phase (years 6–7), and $21,000 annually for the maintenance phase (year 7 and beyond).

Rationale

Commented [h5]: Can you change this heading in some way so it doesn't look like a subheading under Estimated Costs of Implementation? Or perhaps you could relocate this entire section to before the alternative description so it stands out more.

Alternative C with modifications was selected because it best meets the purpose to:

- Aid in the conservation of a native population of Rocky Mountain bighorn sheep located within the park and
- Protect other park resources and values from the rapidly growing non-native mountain goat population.

The EA sufficiently addressed impacts to park resources resulting from ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. The EA was made available for public review and comment during a 30-day period from December 4–20, 2018 and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018 via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have "no potential to cause effect" on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park's determination via email response on April 9, 2018.

~~The park obtained a current species listed (dated June 29, 2019) from the Information Planning and Conservation (IPaC) website.~~ In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on this EA on July 8, 2019 and the Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS's understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park's "may affect, not likely to adversely affect" determination for federally listed species and designated critical habitat. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

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A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018 to solicit comments and concerns. Park leadership met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018 to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and

feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D'Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during the implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Commented [h8]: I added some information from the NID that describes the duration and importance of the impacts and, therefore, supports the conclusion of no significant impacts.

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identified 10 criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the criteria.

The following impact topics were dismissed in the EA because they were found to have no potential for significant impacts: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils, whitebark pine, and wilderness character; however, no potential for significant adverse impacts was identified.

Implementing the selected alternative will have short-term disruptions (several minutes to hours) of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat~~. Overall, the effects are expected to be beneficial,~~ and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased, though not as rapidly when utilizing only lethal removal techniques. Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less

adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≥20 years. The selected alternative will have a negative effect on the **untrammeled quality** of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the **undeveloped quality** of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. The selected alternative will have a positive effect on the **natural quality** of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses will likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the **solitude or primitive and unconfined recreation quality** of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character (collectively the wilderness qualities described above) would be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact would diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

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CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

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ERRATA

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods. This revision does not change the effect of the analysis.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≥20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact would diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA:

Stafl, N. and M. I. O'Connor. 2015. American Pikas' (*Ochotona princeps*) Foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

Commented [h10]: Add text changes about skilled volunteers and donation and use of carcasses.

Commented [h11]: This seems to conflict with statement at line 491.

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Commented [h12]: This seems to conflict with statement at line 484.

Commented [h13]: How does this mesh with the statements at line 484 and line 491? At those lines, we seem to be saying impacts would last a long time, but here we're saying they'd be short-term. I think this just needs a little editing to make the point clearer.

Commented [h14]: How does this mesh with statements at line 484 and line 491? At those lines, we seem to be saying impacts would last a long time, but here we're saying they'd be 1-5 years. I think this just needs a little editing to make the point clearer.

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RESPONSE TO SUBSTANTIVE PUBLIC COMMENTS

Commented [h15]: This is a very well-written section, with the comments clearly described and the responses concise yet comprehensive. Much appreciated.

Response to public comments addresses substantive comments that were received during the public review period. Many comments addressed issues already adequately covered in the EA. Other comments addressed include mountain goat translocation, the use of qualified volunteers, mountain goat carcasses, and bighorn sheep management.

Several comments proposed the reconsideration of alternatives that were considered but dismissed. After receiving considerable public feedback, the preferred alternative was modified to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities. No changes were made in the assessment of environmental consequences.

The park only responded to substantive public comments; those comments and responses are provided below.

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in Campfires in the Canadian Rockies by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region. Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population. The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to "evaluate the species' current or potential impact on park resources." As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, and has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range, NPS policy is clear on the management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Commented [h16]: This seems to conflict with the information at line 663 and line 866, but I'm not sure. That is, here we say "likely connection" but in line 663 we say "migration between the two populations is likely low" and in line 866 we say "preliminary results…did not detect recent gene flow…" I may just be misunderstanding the information and none of this conflicts, but please double-check.

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive

for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (of which is stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

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ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Because wolverine are a proposed species and not formally listed for protection under the ESA, the USFWS will not evaluate the park's assessment of the potential impacts to this species. However, on page 24 of the mountain goat management plan/EA, specific conservation measures are listed and aimed at reducing potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats.

Alternative C

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors would attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) whenever possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother. Placing adult mountain goats in zoos is not being considered.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS is actively evaluating options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after the recent efforts (2018–19) in Olympic National Park, as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. A tiered system of removals could unnecessarily extend time required to remove mountain goats from the Teton Range, thus was not incorporated into the use of qualified volunteers

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative.

Commented [h17]: What were these suggested modifications and are they addressed elsewhere in the response to comments (if so, please identify where; if not, please provide a response).

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

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CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: The NPS plans to use firearms silencers whenever feasible, which would most likely include ground-based removals when visitors may be impacted by sounds of gunfire (e.g., uncommon removal of a goat during summer).

Commented [h18]: Was this stated in the EA? If not, I recommend adding it via the Errata; if so, I recommend noting which page.

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

Mitigation is an integral part of the environmental planning process that involves identifying measures to reduce, minimize, or correct impacts from the proposed action. In the plan the NPS has referred to mitigation measures as conservation measures. These measures or actions are intended to reduce the potential for adverse impacts on individual bighorn sheep and the population as a whole.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. This dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would ~~be needed~~need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting, while the other NPS units generally allow hunting. Qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave national parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park and Grand Canyon National Park have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. Several National Battlefields and Historic Sites utilize professional sharpshooters to remove white-tailed deer. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates.

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified (see page 5). The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

Commented [h19]: Reiterate or reference explanation in FONSI about why this change was made.

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Commented [h20]: I think this still needs to be addressed (or maybe I didn't understand the response well enough?).

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by the nativity (or non-nativity) of the mountain goat population(s) in question. In areas where mountain goats and bighorn sheep are naturally sympatric, both species may indeed coexist with expected "natural" population fluctuations because competitive overlap is limited by partitioning of habitats (niche). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goats populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

Commented [h21]: Is there a way to rewrite this in more layman's terms?

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on wildlife consumption of native high-elevation plants, vegetation community descriptions, mountain goat wallowing, and effects on soils and plants from the use of salt licks.

Response 30: The commenter correctly pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both ~~Mountain~~ mountain goats and ~~Bighorn~~ bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep. The commenter also pointed out typos, caused by auto-correct, in scientific names of some native plants, and a different opinion on which forbs would be considered "tall" and commented on the degree of analysis of the effects of salt licks. While these final three comments are all valid, the adjustments suggested by the commenter, if made, would not change the impact analysis.

Commented [h22]: What was the comment? Please clarify so that you can respond to it here.

Commented [h23]: If this is the case, why were the corrections not made to the EA in the Errata?

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental

Commented [h24]: Is "rapid" the right word given that this project was started (scoping) in 2013?

organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, then a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (See Response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would

continue to negatively impact park resources and values, including bighorn sheep and wilderness character.

Hunting outside the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their shift in management philosophy on management of mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Costs/Funding

Comment 38: Several commenters inquired as to the cost to implement each alternative and the sources of funding for each. One commenter was particularly interested in costs associated with live-capture of mountain goats to and transporting them to frontcountry processing sites.

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Response 38: For Alternative A (no action), estimated costs to capture and monitor at least 10 goats/year the park would be approximately $8,500/goat (capture = $6,000/goat and GPS radio

collar = $2,500/collar), at least $2,000 of fixed wing time annually to aerially monitor goats in the summer, as well as approximately $10,000 in administrative costs at annual estimated cost of $97,000 for as long as park could commit to an effective monitoring program. For Alternative B (lethal control), estimated costs to lethally remove all goats would be approximately $300/goat (including carcass removal of half the goats killed), $22,000 of fixed wing time to assist and monitor removal efforts, as well as approximately $10,000 in administrative costs at an estimated cost of $66,000 for the first year of implementation with approximately 90% of population removed. For implementation of Alternative C, please see the "Estimated Costs of Implementation" section on page 7.

Other mountain goat populations

Comment 39: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 39: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 40: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 40: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

The Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was not referenced in the mountain goat management plan/EA because the NPS plan did not propose

any actions related to the interaction of these two species. This group and the recommendations outlined in the plan focus on issues of concern related to interactions between bighorn sheep and domestic sheep.

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APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archaeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the Cultural Resources Program Manager for record keeping purposes and to pursue archaeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archaeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park archaeologist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources. See Cultural Resources mitigation measures for additional requirements.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored throughout the season and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.

- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.

- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)
- Volunteers will ensure carcass or gut piles are >100 yards from trails, campsites, camping zones, cabins, etc. If this is not practical, skilled volunteers will report the location of any remains to NPS so a temporary closure can be implemented.

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Appendix B: NON-IMPAIRMENT DETERMINATION

Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in

relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in the number of predators and scavengers for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep such a response if not anticipated for several reasons. Scavenger and predator populations typically increase via immigration (individuals moving into an area) or demographically (food surplus leading to improved condition of adults, larger litters, and higher survival of offspring). In mid-winter, the

wolverine is the species most likely to be present in the high elevations of the project area where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because mountain goats and bighorn sheep currently occur in spatially distinct areas and the availability of carrion may divert predation away from live prey. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

~~Though mountain goat removal activities under the selected alternative will result in short-term adverse impacts from disturbance and displacement, bighorn sheep at the population level will not be adversely impacted. Therefore, it has been determined that the selected alternative will not result in an impairment to bighorn sheep.~~

Commented [h26]: I deleted these summary statements (here and for topics below), because this info is now covered in the new conclusion language I added.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

~~Though mountain goat removal activities will result in short-term adverse impacts from disturbance to vegetation and soils in discrete areas of the park, the selected alternative will not result in an impairment on vegetation and soils.~~

Wilderness Character

Under the selected alternative, field activities that involve the removal of mountain goats will likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats will continue for a period of 20 or more years. These removal activities will have a negative effect on the untrammeled quality of wilderness. There will be a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. There will be a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. There will be a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other

field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character (collectively the wilderness qualities described above) will be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact will diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

Commented [h27]: Revise per recommended changes to wilderness section in FONSI and Errata.

~~Though mountain goat removal activities will result in adverse impacts on the untrammeled, undeveloped and solitude or primitive and unconfined recreation qualities of wilderness, the selected alternative will not result in an impairment on wilderness character.~~

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that these resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. ~~As guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the superintendent's professional judgment that implementation of the selected alternative will not constitute impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. This conclusion is based on consideration of the park's purpose and significance, a thorough analysis of the environmental impacts described in the EA, comments provided by the public and others, and the professional judgment of the decision maker guided by the direction of NPS Management Policies (2006).~~

Commented [h28]: This is new template language so I've added it in place of the old language.

Re_ GRTE_JODR Mountain Goat Management Plan_EA ...(1).pdf

From:	Consolo-Murphy, Susan (Sue)
To:	Noon, Daniel
Cc:	David Gustine; Sarah Dewey
Subject:	Re: GRTE/JODR Mountain Goat Management Plan/EA Draft FONSI Review Request (PEPC 47959)
Date:	Friday, August 9, 2019 4:59:37 PM
Attachments:	Draft Mountain Goat Management Plan EA FONSI_IMR EQ Rice Comments plus scm comments. 8-9-19.docx

Daniel, my comments are attached on the version Heather edited.

Sue

Sue Consolo-Murphy
Chief, Science & Resource Management
Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
P.O. Drawer 170
Moose, WY 83012
(307) 739-3481 (w)
(307) 690-8005 (cell)
Sue_Consolo-murphy@nps.gov

On Fri, Aug 9, 2019 at 12:15 PM Rice, Heather <heather_rice@nps.gov> wrote:

> Hi Daniel,
>
> I've finished my review of this FONSI. This was a very nicely written document so thank you to you and your team! I've uploaded my comments to PEPC and have also attached them below. Please let me know if you have any questions or disagree with any of my comments.
>
> Cheers,
> Heather
> **********
>
> Heather Rice
> NEPA Specialist, Environmental Quality Division
> Intermountain Region, National Park Service
> 12795 West Alameda Parkway | Denver, CO 80228
> 303-969-2975 office | 303-969-2717 fax
> heather_rice@nps.gov | IMR-EQ Sharepoint Site
>
> *Have you seen the 2015 NPS NEPA Handbook??*
> *Click here to check it out!*
>
> Plato on NEPA: "The beginning is the most important part of the work."

On Thu, Aug 8, 2019 at 1:13 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

> Hello,
>
> The Grand Teton National Park (GRTE) and John D. Rockefeller, Jr. Memorial Parkway (JODR) Mountain Goat Management Plan / Environmental Assessment Finding of No Significant Impact (FONSI) is ready for regional Environmental Quality review.

The draft FONSI is located at the top of the Internal Documents list of PEPC 47959. The document adheres to the guidance in the 2015 NPS NEPA Handbook and related supplements.

Please contact me if you have any questions or wish to discuss the document.

Thank you.

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

Draft Mountain Goat Management Plan EA FONSI _3.pdf

DRAFT

[redacted]

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins~~**[NAME]**~~ Date
Acting Regional Director, NPS Intermountain Region
DOI Unified Region 7 – Upper Colorado Basin

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INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. To the extent necessary, relevant sections of the EA are incorporated by reference below.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) with modifications to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities.

Commented [h2]: Per Section 4.7 of the NPS NEPA Handbook, briefly describe the reasons for the changes and whether and how the changes alter the impact analysis that was included in the EA. Also make sure these changes are noted in the attached Errata.

The selected alternative will implement a management plan to remove non-native mountain goats from the park using a combination of non-lethal and lethal removal methods.

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction efforts via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition from intensive to tactical monitoring and removal. Tactical monitoring and removal efforts will occur year round.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is

uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring will continue and it may be necessary to employ several monitoring methods simultaneously in combination. Removal efforts will likely be ground-based and tactical.

LIVE CAPTURE AND TRANSLOCATION

Mountain goats will be captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will work closely with appropriate state wildlife and federal land management agencies or other approved recipients to plan and execute the translocations. Recipients will generally be responsible for transport and associated costs to move mountain goats from frontcountry staging areas within the park to release sites outside of the park. Mountain goats could be captured over the course of 3−5 years, with most activity occurring within the first 1−2 years. Capture operations will occur between December and March. Captured mountain goats will be transported by helicopter to frontcountry staging areas, where they will be transferred to approved recipients. Capture and translocation is projected to involve approximately 32% of the 125 mountain goats. However, the number of mountain goats captured and translocated could be more or less, depending on capture success and the interest from outside entities to receive mountain goats and their ability to cover transport, disease testing, and associated expenses.

Commented [CS(L3]: I question implying 'year 1' for this

Live capture operations will occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats will be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath the helicopter in a transport bag to a frontcountry staging area. NPS personnel will coordinate with Wyoming Game and Fish Department (WGFD) personnel and others to facilitate the transfer of mountain goats to recipients. Recipients will be responsible for acquiring transport or other permits as necessary. In accordance with standard operating procedures, NPS Management Policies, the Animal Welfare Act, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the American Veterinary Medical Association (AVMA). After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park. Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.

When translocation and lethal removal activities occur in the same management period, live capture and translocation activities will generally occur prior to lethal removal. This order of actions is desirable because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and a significant portion of the population is in terrain where capture can be achieved safely. As the removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. As capture operations progress, the goats are likely to shift their distribution to areas of rougher terrain where safe capture is difficult. If capture efficiency exceeds typical effort for capturing goats (2014−2016 =

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2.5 hours/goat), helicopter-supported translocation operations will cease~~,~~ and shift to lethal removal techniques.

LETHAL REMOVAL

Aerial-based lethal removal will be performed by federal personnel or contractors with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Mountain goats will be removed using firearms with non-lead ammunition from aerial- or ~~the~~ ground-based efforts. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats will be captured and euthanized. Aerial capture techniques will include darting or net-gunning from a helicopter. Ground-capture techniques will include ground darting or baiting goats to a drop net, clover trap, or snare. Aerially~~-~~ captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot). Those captured using ground techniques will be dispatched on site. Animals will be dispatched by trained personnel following established and approved guidelines from the AVMA.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Commented [CS(L5]: Sounds very exact…

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will also be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with the NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals

Operations Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially- based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

USE OF QUALIFIED VOLUNTEERS

The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

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CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use ~~system~~ trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

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TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved, but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures.

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MOUNTAIN GOAT MONITORING

Monitoring activities will include temporary capture (helicopter–based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, and as well as possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards athe natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During the aerial survey, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following established and approved capture and handling protocols. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries and baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. For example, given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter. Capture with transport will involve two backcountry landings per animal–one to pick the animal up and one to return it to its capture location.

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EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

NPS wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

ESTIMATED COSTS OF IMPLEMENTATION

Based on the current mountain goat population estimate within the park (approx. 125 individuals), the estimated costs, in 2019 dollars, to implement the following phases of alternative C, as described on pages 2–3, are approximately $440,000 for the population reduction phase (68% lethal aerial removal, 16% lethal ground removal, and 16% translocation; years 1–5), approximately $64,000 for the post-reduction phase (years 6–7), and $21,000 annually for the maintenance phase (year 7 and beyond).

Rationale

Commented [h8]: Can you change this heading in some way so it doesn't look like a subheading under Estimated Costs of Implementation? Or perhaps you could relocate this entire section to before the alternative description so it stands out more.

Alternative C with modifications was selected because it best meets the purpose to:

- Aid in the conservation of a native population of Rocky Mountain bighorn sheep located within the park and
- Protect other park resources and values from the rapidly growing non-native mountain goat population.

The EA sufficiently addressed impacts to park resources resulting from ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. The EA was made available for public review and comment during a 30-day period from December 4–20, 2018, and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have "no potential to cause effect" on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park's determination via email response on April 9, 2018.

~~The park obtained a current species listed (dated June 29, 2019) from the Information Planning and Conservation (IPaC) website.~~ In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on this EA on July 8, 2019, ~~and~~ a~~the~~ Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS's understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park's "may affect, not likely to adversely affect" determination for federally listed species and designated critical habitat. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leadership met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and

Commented [CS(L9]: Mention public meeting?

Commented [CS(L10]: There's no explanation of why only 'to raptors', might cause some questions? Might refer to next page under topics dismissed.

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feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D'Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during the implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

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Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identified 10 criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the criteria.

The following impact topics were dismissed in the EA because they were found to have no potential for significant impacts: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils, whitebark pine, and wilderness character; however, no potential for significant adverse impacts was identified.

Implementing the selected alternative ~~will~~may ~~have~~ cause short-term disruptions (several minutes to hours) of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities ~~through conservation measures~~ will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat~~. Overall, the effects are expected to be beneficial,~~ and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased, though not as rapidly when utilizing only lethal removal techniques. Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less

adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≥20 years. The selected alternative will have a negative effect on the **untrammeled quality** of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the **undeveloped quality** of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. The selected alternative will have a positive effect on the **natural quality** of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses will likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the **solitude or primitive and unconfined recreation quality** of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character (collectively the wilderness qualities described above) would be mostly ~~impa~~affected during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact would diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

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Commented [h14]: I added text from Errata to provide information on duration of impacts. But please revise the added text to reflect changes made in response to comments in the Errata.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

DRAFT

ERRATA

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods. This revision does not change the effect of the analysis.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≥20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affec~~impac~~ted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact would diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA:

Stafl, N. and M. I. O'Connor. 2015. American Pikas' (*Ochotona princeps*) Foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

Commented [h15]: Add text changes about skilled volunteers and donation and use of carcasses.

Commented [h16]: This seems to conflict with statement at line 491.

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Commented [h17]: This seems to conflict with statement at line 484.

Commented [h18]: How does this mesh with the statements at line 484 and line 491? At those lines, we seem to be saying impacts would last a long time, but here we're saying they'd be short-term. I think this just needs a little editing to make the point clearer.

Commented [h19]: How does this mesh with statements at line 484 and line 491? At those lines, we seem to be saying impacts would last a long time, but here we're saying they'd be 1-5 years. I think this just needs a little editing to make the point clearer.

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RESPONSE TO SUBSTANTIVE PUBLIC COMMENTS

Commented [h20]: This is a very well-written section, with the comments clearly described and the responses concise yet comprehensive. Much appreciated.

Response to public comments addresses substantive comments that were received during the public review period. Many comments addressed issues already adequately covered in the EA. Other comments addressed include mountain goat translocation, the use of qualified volunteers, mountain goat carcasses, and bighorn sheep management.

Several comments proposed the reconsideration of alternatives that were considered but dismissed. After receiving considerable public feedback, the preferred alternative was modified to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities. No changes were made in the assessment of environmental consequences.

The park only responded to substantive public comments; those comments and responses are provided below.

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in Campfires in the Canadian Rockies by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region. Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population. The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to "evaluate the species' current or potential impact on park resources." As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, and has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range, NPS policy is clear on the management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Commented [h21]: This seems to conflict with the information at line 663 and line 866, but I'm not sure. That is, here we say "likely connection" but in line 663 we say "migration between the two populations is likely low" and in line 866 we say "preliminary results…did not detect recent gene flow…" I may just be misunderstanding the information and none of this conflicts, but please double-check.

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive

for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (of which is stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

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ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Because wolverine are a proposed species and not formally listed for protection under the ESA, the USFWS will not evaluate the park's assessment of the potential impacts to this species. However, on page 24 of the mountain goat management plan/EA, specific conservation measures are listed and aimed at reducing potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats.

Alternative C

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors would attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) whenever possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother. Placing adult mountain goats in zoos is not being considered.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS is actively evaluating options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after the recent efforts (2018–19) in Olympic National Park, as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. A tiered system of removals could unnecessarily extend time required to remove mountain goats from the Teton Range, thus was not incorporated into the use of qualified volunteers

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative.

Commented [h22]: What were these suggested modifications and are they addressed elsewhere in the response to comments (if so, please identify where; if not, please provide a response).

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

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CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: The NPS plans to use firearms silencers whenever feasible, which would most likely include ground-based removals when visitors may be impacted by sounds of gunfire (e.g., uncommon removal of a goat during summer).

Commented [h23]: Was this stated in the EA? If not, I recommend adding it via the Errata; if so, I recommend noting which page.

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

Mitigation is an integral part of the environmental planning process that involves identifying measures to reduce, minimize, or correct impacts from the proposed action. In the plan the NPS has referred to mitigation measures as conservation measures. These measures or actions are intended to reduce the potential for adverse impacts on individual bighorn sheep and the population as a whole.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. This dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would ~~be needed~~need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting, while the other NPS units generally allow hunting. Qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave national parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park and Grand Canyon National Park have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. Several n~~N~~ational b~~B~~attlefields and h~~H~~istoric s~~S~~ites utilize professional sharpshooters to remove white-tailed deer. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Commented [CS(L24]: I find this reference to 'other NPS units' confusing.

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates.

Commented [CS(L25]: Could add that leaving the goats on the landscape would not achieve objective #2 to reduce effects on other park resources.

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified (see page 5). The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

Commented [h26]: Reiterate or reference explanation in FONSI about why this change was made.

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by the nativity (or non-nativity) of the mountain goat population(s) in question. ~~In areas where mountain goats and bighorn sheep are naturally sympatric,~~ B~~b~~oth species do~~may~~ indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier NP, in Montana); in such areas, ~~with expected "natural" population fluctuations because~~ competitive overlap is limited by each species' partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goats populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

Commented [CS(L27]: Might we reference response #32 on the next page and ongoing efforts or future considerations to retain sheep?

Commented [h28]: I think this still needs to be addressed (or maybe I didn't understand the response well enough?).

Commented [h29]: Is there a way to rewrite this in more layman's terms?

Commented [CS(L30]: I tried some re-wording of this section…

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on wildlife consumption of native high-elevation plants, vegetation community descriptions, mountain goat wallowing, and effects on soils and plants from the use of salt licks.

Response 30: The commenter correctly pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both ~~Mountain~~ mountain goats and ~~Bighorn~~ bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep. The commenter also pointed out typos, caused by auto-correct, in scientific names of some native plants, and a different opinion on which forbs would be considered "tall" and commented on the degree of analysis of the effects of salt licks. While these final three comments are all valid, the adjustments suggested by the commenter, if made, would not change the impact analysis.

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Commented [h31]: What was the comment? Please clarify so that you can respond to it here.

Commented [h32]: If this is the case, why were the corrections not made to the EA in the Errata?

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population.

Commented [h33]: Is "rapid" the right word given that this project was started (scoping) in 2013?

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, then a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (See Response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affimpact park resources and values, including bighorn sheep and wilderness character.

Hunting outside the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their shift in management philosophy on management of mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Costs/Funding

Comment 38: Several commenters inquired as to the cost to implement each alternative and the sources of funding for each. One commenter was particularly interested in costs associated with live-capture of mountain goats to and transporting them to frontcountry processing sites.

Commented [h34]: Edit needed?

Response 38: For Alternative A (no action), estimated costs to capture and monitor at least 10 goats/year the park would be approximately $8,500/goat (capture = $6,000/goat and GPS radio collar = $2,500/collar), at least $2,000 of fixed wing time annually to aerially monitor goats in the summer, as well as approximately $10,000 in administrative costs at annual estimated cost of $97,000 for as long as park could commit to an effective monitoring program. For Alternative B

(lethal control), estimated costs to lethally remove all goats would be approximately $300/goat (including carcass removal of half the goats killed), $22,000 of fixed wing time to assist and monitor removal efforts, as well as approximately $10,000 in administrative costs at an estimated cost of $66,000 for the first year of implementation with approximately 90% of population removed. For implementation of Alternative C, please see the "Estimated Costs of Implementation" section on page 7.

Other mountain goat populations

Comment 39: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 39: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 40: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 40: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

The Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was not referenced in the mountain goat management plan/EA because the NPS plan did not propose any actions related to the interaction of these two species. This group and the recommendations outlined in the plan focus on issues of concern related to interactions between bighorn sheep and domestic sheep.

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APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of arch~~a~~eological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the c~~C~~ultural r~~R~~esources p~~P~~rogram m~~M~~anager for record keeping purposes and to pursue arch~~a~~eological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional arch~~a~~eologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park arch~~a~~eologist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources. See Cultural Resources mitigation measures for additional requirements.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored throughout the season and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.

- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.

- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)
- Volunteers will ensure carcass or gut piles are >100 yards from trails, campsites, camping zones, cabins, etc. If this is not practical, skilled volunteers will report the location of any remains to NPS so a temporary closure can be implemented.

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Appendix B: NON-IMPAIRMENT DETERMINATION

Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in

relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in the number of predators and scavengers for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep such a response if not anticipated for several reasons. Scavenger and predator populations typically increase via immigration (individuals moving into an area) or demographically (food surplus leading to improved condition of adults, larger litters, and higher survival of offspring). In mid-winter, the

wolverine is the species most likely to be present in the high elevations of the project area where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because mountain goats and bighorn sheep currently occur in spatially distinct areas and the availability of carrion may divert predation away from live prey. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

~~Though mountain goat removal activities under the selected alternative will result in short-term adverse impacts from disturbance and displacement, bighorn sheep at the population level will not be adversely impacted. Therefore, it has been determined that the selected alternative will not result in an impairment to bighorn sheep.~~

Commented [h35]: I deleted these summary statements (here and for topics below), because this info is now covered in the new conclusion language I added.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

~~Though mountain goat removal activities will result in short-term adverse impacts from disturbance to vegetation and soils in discrete areas of the park, the selected alternative will not result in an impairment on vegetation and soils.~~

Wilderness Character

Under the selected alternative, field activities that involve the removal of mountain goats will likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats will continue for a period of 20 or more years. These removal activities will have a negative effect on the untrammeled quality of wilderness. There will be a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. There will be a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. There will be a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other

field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character (collectively the wilderness qualities described above) will be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact will diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

Commented [h36]: Revise per recommended changes to wilderness section in FONSI and Errata.

~~Though mountain goat removal activities will result in adverse impacts on the untrammeled, undeveloped and solitude or primitive and unconfined recreation qualities of wilderness, the selected alternative will not result in an impairment on wilderness character.~~

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that these resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. ~~As guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the superintendent's professional judgment that implementation of the selected alternative will not constitute impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. This conclusion is based on consideration of the park's purpose and significance, a thorough analysis of the environmental impacts described in the EA, comments provided by the public and others, and the professional judgment of the decision maker guided by the direction of NPS Management Policies (2006).~~

Commented [h37]: This is new template language so I've added it in place of the old language.

Mountain Goat Management Plan FONSI Status Upda....pdf

From:	Noon, Daniel
To:	Susan (Sue) Consolo-Murphy; David Gustine; Sarah Dewey; McCloskey, Kelly
Subject:	Mountain Goat Management Plan FONSI Status Update (PEPC 47959)
Date:	Monday, August 12, 2019 10:36:49 AM
Attachments:	Draft Mountain Goat Management Plan EA FONSI (2019_08_09).docx

Hello,

I received feedback from the regional Environmental Quality Division (EQD) on our draft Mountain Goat Management Plan FONSI. Heather Rice of EQD commended us on a well-written FONSI.

Sue: Thanks for providing comments to the version of the FONSI that Heather provided to us. I'll review them and will make revisions.

I resolved most of the comments, but I need your assistance with some of the them (see attached):

1. **Dave or Sarah:** Response 3 (disease status of mountain goats)
2. **Dave or Sarah:** Response 19 (coordination)
3. **Dave or Sarah:** Response 21 (conservation measures - silencers)
4. **Sue:** Comment and response 23 (third bullet omitted on a comment about Wyoming Game and Fish Department managing mountain goats in the park). Should we provide a response to this or leave the comment out of the FONSI? If responding, draft a brief response.
5. **Dave or Sarah:** Comment and response 29 (bighorn sheep and mountain goat coexistence)
6. **Kelly:** Response 30 (vegetation and soils). Let's discuss how to revise the response together this week. Please contact me.

Updates:

- The regional office provided the FONSI to the DOI Solicitor for review. The regional office requested comments/edits from assigned solicitor by Friday, August 15.
- I will work on drafting the weekly report statement for the regional director approval of the decision, and if approved, public release of the FONSI on or about September 4 (three weeks from Wednesday). I'll provide this for review by the end of today (separate email). We will need to submit the weekly report this Wednesday. Please note that the release of the FONSI will depend on notifications with entities provided in the communications plan.

My goal is to (1) "finalize" the FONSI based on your revisions and input from the assigned solicitor by this Friday (August 16), (2) provide Heather one final review, and (3) route the FONSI to the regional office for regional director review and decision. Based on these milestones, I anticipate a decision on the mountain goat management plan as early as the first week of September and a public release of the FONSI by the end of that week or beginning of the week of September 9.

Please contact me if you have any questions. Thanks!

Daniel Noon

Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

Draft Mountain Goat Management Plan EA FONSI _4.pdf

DRAFT

[redacted]

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins~~**[NAME]**~~ Date
Acting Regional Director, NPS Intermountain Region
DOI Unified Region 7 – Upper Colorado Basin

Commented [h1]: Stay tuned…we're still checking on how this needs to be written.

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INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. To the extent necessary, relevant sections of the EA are incorporated by reference below.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) with modifications to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to remove non-native mountain goats from the park using a combination of non-lethal and lethal removal methods. This alternative best meets the purpose to:

- Aid in the conservation of a native population of bighorn sheep located within the park and
- Protect other park resources and values from the rapidly growing non-native mountain goat population.

The EA sufficiently addressed impacts to park resources resulting from ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to

Commented [h2]: Per Section 4.7 of the NPS NEPA Handbook, briefly describe the reasons for the changes and whether and how the changes alter the impact analysis that was included in the EA. Also make sure these changes are noted in the attached Errata.

Commented [ND3R2]: Revised.

successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

~~The selected alternative will implement a management plan to remove non-native mountain goats from the park using a combination of non-lethal and lethal removal methods.~~

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction efforts via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition from intensive to tactical monitoring and removal. Tactical monitoring and removal efforts will occur year round.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring will continue and it may be necessary to employ several monitoring methods simultaneously in combination. Removal efforts will likely be ground-based and tactical.

LIVE CAPTURE AND TRANSLOCATION

Mountain goats will be captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will work closely with appropriate state wildlife and federal land management agencies or other approved recipients to plan and execute the translocations. Recipients will generally be responsible for transport and associated costs to move mountain goats from frontcountry staging areas within the park to release sites outside of the park. Mountain goats could be captured over the course of 3−5 years, with most activity occurring within the first 1−2 years. Capture operations will occur between December and March. Captured mountain goats will be transported by helicopter to frontcountry staging areas, where they will be transferred to approved recipients. Capture and translocation is projected to involve approximately 32% of the 125 mountain goats. However, the number of mountain goats captured and translocated could be more or less, depending on capture success and the interest from outside entities to receive mountain goats and their ability to cover transport, disease testing, and associated expenses.

Live capture operations will occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats will be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath the helicopter in a transport bag to a frontcountry staging area. NPS personnel will coordinate with Wyoming Game and Fish Department (WGFD) personnel and others to facilitate the transfer of mountain goats to recipients. Recipients will be responsible for acquiring transport or other permits as necessary. In accordance with standard operating procedures, NPS Management Policies, the Animal Welfare Act, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the American Veterinary Medical Association (AVMA). After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park. Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.

When translocation and lethal removal activities occur in the same management period, live capture and translocation activities will generally occur prior to lethal removal. This order of actions is desirable because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and a significant portion of the population is in terrain where capture can be achieved safely. As the removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. As capture operations progress, the goats are likely to shift their distribution to areas of rougher terrain where safe capture is difficult. If capture efficiency exceeds typical effort for capturing goats (2014−2016 = 2.5 hours/goat), helicopter-supported translocation operations will cease, and shift to lethal removal techniques.

LETHAL REMOVAL

Aerial-based lethal removal will be performed by federal personnel or contractors with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Mountain goats will be removed using firearms with non-lead ammunition from aerial- or the ground-based efforts. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats will be captured and euthanized. Aerial capture techniques will include darting or net-gunning from a helicopter. Ground-capture techniques will include ground darting or baiting goats to a drop net, clover trap, or snare. Aerially-captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot). Those captured using ground techniques will be dispatched on site. Animals will be dispatched by trained personnel following established and approved guidelines from the AVMA.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March. If late fall/winter missions are

unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will also be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with the NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially-based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

USE OF QUALIFIED VOLUNTEERS

The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

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CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if

conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

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Commented [ND7R6]: Completed.

TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved, but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures.

MOUNTAIN GOAT MONITORING

Monitoring activities will include temporary capture (helicopter based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, as well as possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards the natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During the aerial survey, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following established and approved capture and handling protocols. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries and baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. For example, given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter. Capture with transport will involve two backcountry landings per animal–one to pick the animal up and one to return it to its capture location.

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EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

NPS wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

ESTIMATED COSTS OF IMPLEMENTATION

Based on the current mountain goat population estimate within the park (approx. 125 individuals), the estimated costs, in 2019 dollars, to implement the following phases of alternative C, as described on pages 2–3, are approximately $440,000 for the population reduction phase (68% lethal aerial removal, 16% lethal ground removal, and 16% translocation; years 1–5), approximately $64,000 for the post-reduction phase (years 6–7), and $21,000 annually for the maintenance phase (year 7 and beyond).

~~Rationale~~

~~Alternative C with modifications was selected because it best meets the purpose to:~~

- ~~Aid in the conservation of a native population of Rocky Mountain bighorn sheep located within the park and~~
- ~~Protect other park resources and values from the rapidly growing non-native mountain goat population.~~

~~The EA sufficiently addressed impacts to park resources resulting from ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.~~

Commented [h8]: Can you change this heading in some way so it doesn't look like a subheading under Estimated Costs of Implementation? Or perhaps you could relocate this entire section to before the alternative description so it stands out more.

Commented [ND9R8]: Relocated the rationale to page 3.

~~The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.~~

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. The EA was made available for public review and comment during a 30-day period from December 4–20, 2018 and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018 via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have "no potential to cause effect" on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park's determination via email response on April 9, 2018.

~~The park obtained a current species listed (dated June 29, 2019) from the Information Planning and Conservation (IPaC) website.~~ In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on this EA on July 8, 2019 and the Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS's understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park's "may affect, not likely to adversely affect" determination for Canada lynx and grizzly bear, and "not likely to jeopardize" determination for the North American wolverine. ~~federally listed species and designated critical habitat.~~ The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

Commented [h10]: I moved this statement here so that it was discussed in chronological order with the rest of the information in this paragraph.

Commented [ND11R10]: Thanks!

Commented [h12]: Please name these spp and critical habitat.

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A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018 to solicit comments and concerns. Park leadership met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018 to discuss the proposed management plan. The Tribes submitted comments on the technical

meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D'Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during the implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identified 10 criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the criteria.

The following impact topics were dismissed in the EA because they were found to have no potential for significant impacts: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils, whitebark pine, and wilderness character; however, no potential for significant adverse impacts was identified.

Implementing the selected alternative will have short-term disruptions (several minutes to hours) of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat~~. Overall, the effects are expected to be beneficial,~~ and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased, though not as rapidly when utilizing only lethal removal techniques. Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are

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Commented [ND15R14]: Thanks for the additions!

diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. The selected alternative will have a negative effect on the **untrammeled quality** of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the **undeveloped quality** of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. The selected alternative will have a positive effect on the **natural quality** of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses will likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the **solitude or primitive and unconfined recreation quality** of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly impacted during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. However, this impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.~~wilderness character (collectively the wilderness qualities described above) would be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact would diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.~~

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

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Commented [ND17R16]: Revised.

Commented [h18]: I added text from Errata to provide information on duration of impacts. But please revise the added text to reflect changes made in response to comments in the Errata.

Commented [ND19R18]: Revised.

DRAFT

ERRATA

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section:

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following text is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA (page 22):

4. **Qualified Volunteers:** The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods. This revision does not change the effect of the analysis.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a

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Commented [ND25R24]: The statement should be less than or equal to 20 years (temporal scope of the plan).

negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly impacted during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this ~~short-term~~ impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced ~~after the first one to five years~~ resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA:

Stafl, N. and M. I. O'Connor. 2015. American Pikas' (*Ochotona princeps*) Foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

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Commented [h26]: This seems to conflict with statement at line 484.

Commented [ND27R26]: See comment above.

Commented [h28]: How does this mesh with the statements at line 484 and line 491? At those lines, we seem to be saying impacts would last a long time, but here we're saying they'd be short-term. I think this just needs a little editing to make the point clearer.

Commented [ND29R28]: Statements revised.

Commented [h30]: How does this mesh with statements at line 484 and line 491? At those lines, we seem to be saying impacts would last a long time, but here we're saying they'd be 1-5 years. I think this just needs a little editing to make the point clearer.

Commented [ND31R30]: Statements revised.

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RESPONSE TO SUBSTANTIVE PUBLIC COMMENTS

Commented [h32]: This is a very well-written section, with the comments clearly described and the responses concise yet comprehensive. Much appreciated.

Response to public comments addresses substantive comments that were received during the public review period. Many comments addressed issues already adequately covered in the EA. Other comments addressed include mountain goat translocation, the use of qualified volunteers, mountain goat carcasses, and bighorn sheep management.

Several comments proposed the reconsideration of alternatives that were considered but dismissed. After receiving considerable public feedback, the preferred alternative was modified to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities. No changes were made in the assessment of environmental consequences.

The park only responded to substantive public comments; those comments and responses are provided below.

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in Campfires in the Canadian Rockies by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region. Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population. The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to "evaluate the species' current or potential impact on park resources." As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, and has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range, NPS policy is clear on the management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Commented [h33]: This seems to conflict with the information at line 663 and line 866, but I'm not sure. That is, here we say "likely connection" but in line 663 we say "migration between the two populations is likely low" and in line 866 we say "preliminary results…did not detect recent gene flow…" I may just be misunderstanding the information and none of this conflicts, but please double-check.

Commented [ND34R33]: Dave or Sarah: could you address this comment?

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive

for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (of which is stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

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ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Because wolverine are a proposed species and not formally listed for protection under the ESA, the USFWS will not evaluate the park's assessment of the potential impacts to this species. However, on page 24 of the mountain goat management plan/EA, specific conservation measures are listed and aimed at reducing potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats.

Alternative C

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors would attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) whenever possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother. Placing adult mountain goats in zoos is not being considered.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS is actively evaluating options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after the recent efforts (2018–19) in Olympic National Park, as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. A tiered system of removals could unnecessarily extend time required to remove mountain goats from the Teton Range, thus was not incorporated into the use of qualified volunteers

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative.

Commented [h35]: What were these suggested modifications and are they addressed elsewhere in the response to comments (if so, please identify where; if not, please provide a response).

Commented [ND36R35]: Dave or Sarah: could you address this comment?

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

DRAFT

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22)) ~~The NPS plans to use firearms silencers whenever feasible, which would most likely include ground-based removals when visitors may be impacted by sounds of gunfire (e.g., uncommon removal of a goat during summer).~~ However, there may be certain instances when and where the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities.

Commented [h37]: Was this stated in the EA? If not, I recommend adding it via the Errata; if so, I recommend noting which page.

Commented [ND38R37]: Revised. There is a specific conservation measure in the EA (page 22) regarding firearm silencer use.

Dave and Sarah: please review and revise if needed.

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

Mitigation is an integral part of the environmental planning process that involves identifying measures to reduce, minimize, or correct impacts from the proposed action. In the plan the NPS has referred to mitigation measures as conservation measures. These measures or actions are intended to reduce the potential for adverse impacts on individual bighorn sheep and the population as a whole.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or

- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. This dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would ~~be needed~~need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting, while the other NPS units generally allow hunting. Qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave national parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park and Grand Canyon National Park have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. Several National Battlefields and Historic Sites utilize professional sharpshooters to remove white-tailed deer. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates.

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified (see page 5). The use of qualified volunteers has been added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The

Commented [h39]: Reiterate or reference explanation in FONSI about why this change was made.

Commented [ND40R39]: Revised.

program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by the nativity (or non-nativity) of the mountain goat population(s) in question. In areas where mountain goats and bighorn sheep are naturally sympatric, both species may indeed coexist with expected "natural" population fluctuations because competitive overlap is limited by partitioning of habitats (niche). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goats populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

Commented [h41]: I think this still needs to be addressed (or maybe I didn't understand the response well enough?).

Commented [ND42R41]: Dave or Sarah: I do not think we provided a specific response on why some bighorn sheep populations struggle in places where mountain goats are not present. Please provide a response with example(s) of where this occurs (or even not occurs).

Commented [h43]: Is there a way to rewrite this in more layman's terms?

Commented [ND44R43]: Dave or Sarah: Could you revise?

DRAFT

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on wildlife consumption of native high-elevation plants, vegetation community descriptions, mountain goat wallowing, and effects on soils and plants from the use of salt licks.

Response 30: The commenter correctly pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both ~~Mountain~~ mountain goats and ~~Bighorn~~ bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep. The commenter also pointed out typos, caused by auto-correct, in scientific names of some native plants, and a different opinion on which forbs would be considered "tall" and commented on the degree of analysis of the effects of salt licks. While these final three comments are all valid, the adjustments suggested by the commenter, if made, would not change the impact analysis.

Commented [h45]: What was the comment? Please clarify so that you can respond to it here.

Commented [ND46R45]: Kelly: let's discuss the comment and response.

Commented [h47]: If this is the case, why were the corrections not made to the EA in the Errata?

Commented [ND48R47]: Kelly: let's discuss the comment and response.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental

Commented [h49]: Is "rapid" the right word given that this project was started (scoping) in 2013?

Commented [ND50R49]: Yes. This is the correct.

organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, then a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (See Response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would

continue to negatively impact park resources and values, including bighorn sheep and wilderness character.

Hunting outside the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their shift in management philosophy on management of mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Costs/Funding

Comment 38: Several commenters inquired as to the cost to implement each alternative and the sources of funding for each. One commenter was particularly interested in costs associated with live-capture of mountain goats ~~to~~ and transporting them to frontcountry processing sites.

Commented [h51]: Edit needed?

Commented [ND52R51]: Revised.

Response 38: For Alternative A (no action), estimated costs to capture and monitor at least 10 goats/year the park would be approximately $8,500/goat (capture = $6,000/goat and GPS radio

collar = $2,500/collar), at least $2,000 of fixed wing time annually to aerially monitor goats in the summer, as well as approximately $10,000 in administrative costs at annual estimated cost of $97,000 for as long as park could commit to an effective monitoring program. For Alternative B (lethal control), estimated costs to lethally remove all goats would be approximately $300/goat (including carcass removal of half the goats killed), $22,000 of fixed wing time to assist and monitor removal efforts, as well as approximately $10,000 in administrative costs at an estimated cost of $66,000 for the first year of implementation with approximately 90% of population removed. For implementation of Alternative C, please see the "Estimated Costs of Implementation" section on page 7.

Other mountain goat populations

Comment 39: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 39: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 40: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 40: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

The Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was not referenced in the mountain goat management plan/EA because the NPS plan did not propose

any actions related to the interaction of these two species. This group and the recommendations outlined in the plan focus on issues of concern related to interactions between bighorn sheep and domestic sheep.

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APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archaeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the Cultural Resources Program Manager for record keeping purposes and to pursue archaeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archaeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park archaeologist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources. See Cultural Resources mitigation measures for additional requirements.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored throughout the season and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.

- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.

- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)
- Volunteers will ensure carcass or gut piles are >100 yards from trails, campsites, camping zones, cabins, etc. If this is not practical, skilled volunteers will report the location of any remains to NPS so a temporary closure can be implemented.

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Appendix B: NON-IMPAIRMENT DETERMINATION

Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in

relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in the number of predators and scavengers for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep such a response if not anticipated for several reasons. Scavenger and predator populations typically increase via immigration (individuals moving into an area) or demographically (food surplus leading to improved condition of adults, larger litters, and higher survival of offspring). In mid-winter, the

wolverine is the species most likely to be present in the high elevations of the project area where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because mountain goats and bighorn sheep currently occur in spatially distinct areas and the availability of carrion may divert predation away from live prey. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

~~Though mountain goat removal activities under the selected alternative will result in short-term adverse impacts from disturbance and displacement, bighorn sheep at the population level will not be adversely impacted. Therefore, it has been determined that the selected alternative will not result in an impairment to bighorn sheep.~~

Commented [h53]: I deleted these summary statements (here and for topics below), because this info is now covered in the new conclusion language I added.

Commented [ND54R53]: Thanks!

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

~~Though mountain goat removal activities will result in short-term adverse impacts from disturbance to vegetation and soils in discrete areas of the park, the selected alternative will not result in an impairment on vegetation and soils.~~

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. The selected alternative will have a negative effect on the **untrammeled quality** of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the **undeveloped quality** of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. The selected alternative will have a positive effect on the **natural quality** of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses will likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be

reduced if translocation operations are successful. The selected alternative will have a negative effect on the **solitude or primitive and unconfined recreation quality** of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly impacted during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. However, this impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.~~field activities that involve the removal of mountain goats will likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats will continue for a period of 20 or more years. These removal activities will have a negative effect on the untrammeled quality of wilderness. There will be a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. There will be a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. There will be a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.~~

~~Under the selected alternative, wilderness character (collectively the wilderness qualities described above) will be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact will diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.~~

~~Though mountain goat removal activities will result in adverse impacts on the untrammeled, undeveloped and solitude or primitive and unconfined recreation qualities of wilderness, the selected alternative will not result in an impairment on wilderness character.~~

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that these resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. ~~As guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the superintendent's professional judgment that implementation of the selected alternative will not constitute impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. This conclusion is based on consideration of the park's purpose and significance, a thorough analysis of the environmental impacts described in the~~

Commented [h55]: How does this mesh with the statements at line 484 and line 491? At those lines, we seem to be saying impacts would last a long time, but here we're saying they'd be short-term. I think this just needs a little editing to make the point clearer.

Commented [ND56R55]: Revised.

Commented [h57]: Revise per recommended changes to wilderness section in FONSI and Errata.

Commented [h58]: This is new template language so I've added it in place of the old language.

Commented [ND59R58]: Thanks!

~~EA, comments provided by the public and others, and the professional judgment of the decision maker guided by the direction of NPS Management Policies (2006).~~

Re_ Mountain Goat Management Plan FONSI Status ....pdf

From:	Consolo-Murphy, Susan (Sue)
To:	Noon, Daniel
Subject:	Re: Mountain Goat Management Plan FONSI Status Update (PEPC 47959)
Date:	Monday, August 12, 2019 11:14:31 AM
Attachments:	Draft Mountain Goat Management Plan EA FONSI (2019_08_09).scm comment.docx

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One comment on item 23.

Sue Consolo-Murphy
Chief, Science & Resource Management
Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
P.O. Drawer 170
Moose, WY 83012
(307) 739-3481 (w)
(307) 690-8005 (cell)
Sue_Consolo-murphy@nps.gov

On Mon, Aug 12, 2019 at 10:36 AM Noon, Daniel <daniel_noon@nps.gov> wrote:

> Hello,
>
> I received feedback from the regional Environmental Quality Division (EQD) on our draft Mountain Goat Management Plan FONSI. Heather Rice of EQD commended us on a well-written FONSI.
>
> Sue: Thanks for providing comments to the version of the FONSI that Heather provided to us. I'll review them and will make revisions.
>
> I resolved most of the comments, but I need your assistance with some of the them (see attached):
>
> 1. **Dave or Sarah:** Response 3 (disease status of mountain goats)
> 2. **Dave or Sarah:** Response 19 (coordination)
> 3. **Dave or Sarah:** Response 21 (conservation measures - silencers)
> 4. **Sue:** Comment and response 23 (third bullet omitted on a comment about Wyoming Game and Fish Department managing mountain goats in the park). Should we provide a response to this or leave the comment out of the FONSI? If responding, draft a brief response.
> 5. **Dave or Sarah:** Comment and response 29 (bighorn sheep and mountain goat coexistence)
> 6. **Kelly:** Response 30 (vegetation and soils). Let's discuss how to revise the response together this week. Please contact me.
>
> **Updates:**
>
> - The regional office provided the FONSI to the DOI Solicitor for review. The regional office requested comments/edits from assigned solicitor by Friday, August 15.
> - I will work on drafting the weekly report statement for the regional director approval of the decision, and if approved, public release of the FONSI on or about September 4 (three weeks from Wednesday). I'll provide this for review by the end of today (separate email). We will need to submit the weekly report this Wednesday. Please

note that the release of the FONSI will depend on notifications with entities provided in the communications plan.

My goal is to (1) "finalize" the FONSI based on your revisions and input from the assigned solicitor by this Friday (August 16), (2) provide Heather one final review, and (3) route the FONSI to the regional office for regional director review and decision. Based on these milestones, I anticipate a decision on the mountain goat management plan as early as the first week of September and a public release of the FONSI by the end of that week or beginning of the week of September 9.

Please contact me if you have any questions. Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

Draft Mountain Goat Management Plan EA FONSI _5.pdf

DRAFT

[redacted]

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins~~**[NAME]**~~ Date
Acting Regional Director, NPS Intermountain Region
DOI Unified Region 7 – Upper Colorado Basin

Commented [h1]: Stay tuned…we're still checking on how this needs to be written.

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INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. To the extent necessary, relevant sections of the EA are incorporated by reference below.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) with modifications to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to remove non-native mountain goats from the park using a combination of non-lethal and lethal removal methods. This alternative best meets the purpose to:

- Aid in the conservation of a native population of bighorn sheep located within the park and
- Protect other park resources and values from the rapidly growing non-native mountain goat population.

The EA sufficiently addressed impacts to park resources resulting from ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to

Commented [h2]: Per Section 4.7 of the NPS NEPA Handbook, briefly describe the reasons for the changes and whether and how the changes alter the impact analysis that was included in the EA. Also make sure these changes are noted in the attached Errata.

Commented [ND3R2]: Revised.

successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

~~The selected alternative will implement a management plan to remove non-native mountain goats from the park using a combination of non-lethal and lethal removal methods.~~

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction efforts via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition from intensive to tactical monitoring and removal. Tactical monitoring and removal efforts will occur year round.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring will continue and it may be necessary to employ several monitoring methods simultaneously in combination. Removal efforts will likely be ground-based and tactical.

LIVE CAPTURE AND TRANSLOCATION

Mountain goats will be captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will work closely with appropriate state wildlife and federal land management agencies or other approved recipients to plan and execute the translocations. Recipients will generally be responsible for transport and associated costs to move mountain goats from frontcountry staging areas within the park to release sites outside of the park. Mountain goats could be captured over the course of 3−5 years, with most activity occurring within the first 1−2 years. Capture operations will occur between December and March. Captured mountain goats will be transported by helicopter to frontcountry staging areas, where they will be transferred to approved recipients. Capture and translocation is projected to involve approximately 32% of the 125 mountain goats. However, the number of mountain goats captured and translocated could be more or less, depending on capture success and the interest from outside entities to receive mountain goats and their ability to cover transport, disease testing, and associated expenses.

Live capture operations will occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats will be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath the helicopter in a transport bag to a frontcountry staging area. NPS personnel will coordinate with Wyoming Game and Fish Department (WGFD) personnel and others to facilitate the transfer of mountain goats to recipients. Recipients will be responsible for acquiring transport or other permits as necessary. In accordance with standard operating procedures, NPS Management Policies, the Animal Welfare Act, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the American Veterinary Medical Association (AVMA). After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park. Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.

When translocation and lethal removal activities occur in the same management period, live capture and translocation activities will generally occur prior to lethal removal. This order of actions is desirable because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and a significant portion of the population is in terrain where capture can be achieved safely. As the removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. As capture operations progress, the goats are likely to shift their distribution to areas of rougher terrain where safe capture is difficult. If capture efficiency exceeds typical effort for capturing goats (2014−2016 = 2.5 hours/goat), helicopter-supported translocation operations will cease, and shift to lethal removal techniques.

LETHAL REMOVAL

Aerial-based lethal removal will be performed by federal personnel or contractors with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Mountain goats will be removed using firearms with non-lead ammunition from aerial- or the ground-based efforts. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats will be captured and euthanized. Aerial capture techniques will include darting or net-gunning from a helicopter. Ground-capture techniques will include ground darting or baiting goats to a drop net, clover trap, or snare. Aerially-captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot). Those captured using ground techniques will be dispatched on site. Animals will be dispatched by trained personnel following established and approved guidelines from the AVMA.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March. If late fall/winter missions are

unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will also be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with the NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially-based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

USE OF QUALIFIED VOLUNTEERS

The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

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CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if

conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

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TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved, but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures.

MOUNTAIN GOAT MONITORING

Monitoring activities will include temporary capture (helicopter based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, as well as possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards the natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During the aerial survey, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following established and approved capture and handling protocols. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries and baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. For example, given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter. Capture with transport will involve two backcountry landings per animal–one to pick the animal up and one to return it to its capture location.

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EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

NPS wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

ESTIMATED COSTS OF IMPLEMENTATION

Based on the current mountain goat population estimate within the park (approx. 125 individuals), the estimated costs, in 2019 dollars, to implement the following phases of alternative C, as described on pages 2–3, are approximately $440,000 for the population reduction phase (68% lethal aerial removal, 16% lethal ground removal, and 16% translocation; years 1–5), approximately $64,000 for the post-reduction phase (years 6–7), and $21,000 annually for the maintenance phase (year 7 and beyond).

~~Rationale~~

~~Alternative C with modifications was selected because it best meets the purpose to:~~

- ~~Aid in the conservation of a native population of Rocky Mountain bighorn sheep located within the park and~~
- ~~Protect other park resources and values from the rapidly growing non-native mountain goat population.~~

~~The EA sufficiently addressed impacts to park resources resulting from ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.~~

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~~The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.~~

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. The EA was made available for public review and comment during a 30-day period from December 4–20, 2018 and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018 via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have "no potential to cause effect" on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park's determination via email response on April 9, 2018.

~~The park obtained a current species listed (dated June 29, 2019) from the Information Planning and Conservation (IPaC) website.~~ In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on this EA on July 8, 2019 and the Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS's understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park's "may affect, not likely to adversely affect" determination for Canada lynx and grizzly bear, and "not likely to jeopardize" determination for the North American wolverine. ~~federally listed species and designated critical habitat.~~ The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

Commented [h10]: I moved this statement here so that it was discussed in chronological order with the rest of the information in this paragraph.

Commented [ND11R10]: Thanks!

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A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018 to solicit comments and concerns. Park leadership met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018 to discuss the proposed management plan. The Tribes submitted comments on the technical

meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D'Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during the implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identified 10 criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the criteria.

The following impact topics were dismissed in the EA because they were found to have no potential for significant impacts: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils, whitebark pine, and wilderness character; however, no potential for significant adverse impacts was identified.

Implementing the selected alternative will have short-term disruptions (several minutes to hours) of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat~~. Overall, the effects are expected to be beneficial,~~ and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased, though not as rapidly when utilizing only lethal removal techniques. Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are

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Commented [ND15R14]: Thanks for the additions!

diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. The selected alternative will have a negative effect on the **untrammeled quality** of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the **undeveloped quality** of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. The selected alternative will have a positive effect on the **natural quality** of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses will likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the **solitude or primitive and unconfined recreation quality** of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly impacted during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. However, this impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.~~wilderness character (collectively the wilderness qualities described above) would be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact would diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.~~

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

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Commented [ND17R16]: Revised.

Commented [h18]: I added text from Errata to provide information on duration of impacts. But please revise the added text to reflect changes made in response to comments in the Errata.

Commented [ND19R18]: Revised.

DRAFT

ERRATA

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section:

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following text is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA (page 22):

4. **Qualified Volunteers:** The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods. This revision does not change the effect of the analysis.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a

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negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly impacted during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this ~~short-term~~ impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced ~~after the first one to five years~~ resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA:

Stafl, N. and M. I. O'Connor. 2015. American Pikas' (*Ochotona princeps*) Foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

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Commented [h26]: This seems to conflict with statement at line 484.

Commented [ND27R26]: See comment above.

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Commented [ND29R28]: Statements revised.

Commented [h30]: How does this mesh with statements at line 484 and line 491? At those lines, we seem to be saying impacts would last a long time, but here we're saying they'd be 1-5 years. I think this just needs a little editing to make the point clearer.

Commented [ND31R30]: Statements revised.

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RESPONSE TO SUBSTANTIVE PUBLIC COMMENTS

Commented [h32]: This is a very well-written section, with the comments clearly described and the responses concise yet comprehensive. Much appreciated.

Response to public comments addresses substantive comments that were received during the public review period. Many comments addressed issues already adequately covered in the EA. Other comments addressed include mountain goat translocation, the use of qualified volunteers, mountain goat carcasses, and bighorn sheep management.

Several comments proposed the reconsideration of alternatives that were considered but dismissed. After receiving considerable public feedback, the preferred alternative was modified to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities. No changes were made in the assessment of environmental consequences.

The park only responded to substantive public comments; those comments and responses are provided below.

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in Campfires in the Canadian Rockies by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region. Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population. The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to "evaluate the species' current or potential impact on park resources." As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, and has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range, NPS policy is clear on the management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Commented [h33]: This seems to conflict with the information at line 663 and line 866, but I'm not sure. That is, here we say "likely connection" but in line 663 we say "migration between the two populations is likely low" and in line 866 we say "preliminary results…did not detect recent gene flow…" I may just be misunderstanding the information and none of this conflicts, but please double-check.

Commented [ND34R33]: Dave or Sarah: could you address this comment?

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive

for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (of which is stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

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ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Because wolverine are a proposed species and not formally listed for protection under the ESA, the USFWS will not evaluate the park's assessment of the potential impacts to this species. However, on page 24 of the mountain goat management plan/EA, specific conservation measures are listed and aimed at reducing potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats.

Alternative C

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors would attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) whenever possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother. Placing adult mountain goats in zoos is not being considered.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS is actively evaluating options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after the recent efforts (2018–19) in Olympic National Park, as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. A tiered system of removals could unnecessarily extend time required to remove mountain goats from the Teton Range, thus was not incorporated into the use of qualified volunteers

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative.

Commented [h35]: What were these suggested modifications and are they addressed elsewhere in the response to comments (if so, please identify where; if not, please provide a response).

Commented [ND36R35]: Dave or Sarah: could you address this comment?

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

DRAFT

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22)) ~~The NPS plans to use firearms silencers whenever feasible, which would most likely include ground-based removals when visitors may be impacted by sounds of gunfire (e.g., uncommon removal of a goat during summer).~~ However, there may be certain instances when and where the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities.

Commented [h37]: Was this stated in the EA? If not, I recommend adding it via the Errata; if so, I recommend noting which page.

Commented [ND38R37]: Revised. There is a specific conservation measure in the EA (page 22) regarding firearm silencer use.

Dave and Sarah: please review and revise if needed.

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

Mitigation is an integral part of the environmental planning process that involves identifying measures to reduce, minimize, or correct impacts from the proposed action. In the plan the NPS has referred to mitigation measures as conservation measures. These measures or actions are intended to reduce the potential for adverse impacts on individual bighorn sheep and the population as a whole.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or

- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. This dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would ~~be needed~~need to be conducted annually into the foreseeable future.

Comment [CS(L39]: I'm concerned about this phrase a little, as the reported 'annual need to conduct' is why hunters might want to participate. Suggest this response focus again on need to act soon with the goal of eradication, not maintenance of nonnative goats.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting, while the other NPS units generally allow hunting. Qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave national parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park and Grand Canyon National Park have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. Several National Battlefields and Historic Sites utilize professional sharpshooters to remove white-tailed deer. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates.

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified (see page 5). The use of qualified volunteers has been added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The

Commented [h40]: Reiterate or reference explanation in FONSI about why this change was made.

Commented [ND41R40]: Revised.

program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by the nativity (or non-nativity) of the mountain goat population(s) in question. In areas where mountain goats and bighorn sheep are naturally sympatric, both species may indeed coexist with expected "natural" population fluctuations because competitive overlap is limited by partitioning of habitats (niche). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goats populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

Commented [h42]: I think this still needs to be addressed (or maybe I didn't understand the response well enough?).

Commented [ND43R42]: Dave or Sarah: I do not think we provided a specific response on why some bighorn sheep populations struggle in places where mountain goats are not present. Please provide a response with example(s) of where this occurs (or even not occurs).

Commented [h44]: Is there a way to rewrite this in more layman's terms?

Commented [ND45R44]: Dave or Sarah: Could you revise?

DRAFT

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on wildlife consumption of native high-elevation plants, vegetation community descriptions, mountain goat wallowing, and effects on soils and plants from the use of salt licks.

Response 30: The commenter correctly pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both ~~Mountain~~ mountain goats and ~~Bighorn~~ bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep. The commenter also pointed out typos, caused by auto-correct, in scientific names of some native plants, and a different opinion on which forbs would be considered "tall" and commented on the degree of analysis of the effects of salt licks. While these final three comments are all valid, the adjustments suggested by the commenter, if made, would not change the impact analysis.

Commented [h46]: What was the comment? Please clarify so that you can respond to it here.

Commented [ND47R46]: Kelly: let's discuss the comment and response.

Commented [h48]: If this is the case, why were the corrections not made to the EA in the Errata?

Commented [ND49R48]: Kelly: let's discuss the comment and response.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental

Commented [h50]: Is "rapid" the right word given that this project was started (scoping) in 2013?

Commented [ND51R50]: Yes. This is the correct.

organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, then a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (See Response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would

continue to negatively impact park resources and values, including bighorn sheep and wilderness character.

Hunting outside the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their shift in management philosophy on management of mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Costs/Funding

Comment 38: Several commenters inquired as to the cost to implement each alternative and the sources of funding for each. One commenter was particularly interested in costs associated with live-capture of mountain goats ~~to~~ and transporting them to frontcountry processing sites.

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Response 38: For Alternative A (no action), estimated costs to capture and monitor at least 10 goats/year the park would be approximately $8,500/goat (capture = $6,000/goat and GPS radio

collar = $2,500/collar), at least $2,000 of fixed wing time annually to aerially monitor goats in the summer, as well as approximately $10,000 in administrative costs at annual estimated cost of $97,000 for as long as park could commit to an effective monitoring program. For Alternative B (lethal control), estimated costs to lethally remove all goats would be approximately $300/goat (including carcass removal of half the goats killed), $22,000 of fixed wing time to assist and monitor removal efforts, as well as approximately $10,000 in administrative costs at an estimated cost of $66,000 for the first year of implementation with approximately 90% of population removed. For implementation of Alternative C, please see the "Estimated Costs of Implementation" section on page 7.

Other mountain goat populations

Comment 39: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 39: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 40: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 40: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

The Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was not referenced in the mountain goat management plan/EA because the NPS plan did not propose

any actions related to the interaction of these two species. This group and the recommendations outlined in the plan focus on issues of concern related to interactions between bighorn sheep and domestic sheep.

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APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archaeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the Cultural Resources Program Manager for record keeping purposes and to pursue archaeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archaeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park archaeologist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources. See Cultural Resources mitigation measures for additional requirements.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored throughout the season and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.

- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.

- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)
- Volunteers will ensure carcass or gut piles are >100 yards from trails, campsites, camping zones, cabins, etc. If this is not practical, skilled volunteers will report the location of any remains to NPS so a temporary closure can be implemented.

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Appendix B: NON-IMPAIRMENT DETERMINATION

Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in

relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in the number of predators and scavengers for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep such a response if not anticipated for several reasons. Scavenger and predator populations typically increase via immigration (individuals moving into an area) or demographically (food surplus leading to improved condition of adults, larger litters, and higher survival of offspring). In mid-winter, the

wolverine is the species most likely to be present in the high elevations of the project area where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because mountain goats and bighorn sheep currently occur in spatially distinct areas and the availability of carrion may divert predation away from live prey. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

~~Though mountain goat removal activities under the selected alternative will result in short-term adverse impacts from disturbance and displacement, bighorn sheep at the population level will not be adversely impacted. Therefore, it has been determined that the selected alternative will not result in an impairment to bighorn sheep.~~

Commented [h54]: I deleted these summary statements (here and for topics below), because this info is now covered in the new conclusion language I added.

Commented [ND55R54]: Thanks!

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

~~Though mountain goat removal activities will result in short-term adverse impacts from disturbance to vegetation and soils in discrete areas of the park, the selected alternative will not result in an impairment on vegetation and soils.~~

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. The selected alternative will have a negative effect on the **untrammeled quality** of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the **undeveloped quality** of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. The selected alternative will have a positive effect on the **natural quality** of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses will likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be

reduced if translocation operations are successful. The selected alternative will have a negative effect on the **solitude or primitive and unconfined recreation quality** of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly impacted during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. However, this impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.~~field activities that involve the removal of mountain goats will likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats will continue for a period of 20 or more years. These removal activities will have a negative effect on the untrammeled quality of wilderness. There will be a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. There will be a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. There will be a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.~~

~~Under the selected alternative, wilderness character (collectively the wilderness qualities described above) will be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact will diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.~~

~~Though mountain goat removal activities will result in adverse impacts on the untrammeled, undeveloped and solitude or primitive and unconfined recreation qualities of wilderness, the selected alternative will not result in an impairment on wilderness character.~~

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that these resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. ~~As guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the superintendent's professional judgment that implementation of the selected alternative will not constitute impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. This conclusion is based on consideration of the park's purpose and significance, a thorough analysis of the environmental impacts described in the~~

Commented [h56]: How does this mesh with the statements at line 484 and line 491? At those lines, we seem to be saying impacts would last a long time, but here we're saying they'd be short-term. I think this just needs a little editing to make the point clearer.

Commented [ND57R56]: Revised.

Commented [h58]: Revise per recommended changes to wilderness section in FONSI and Errata.

Commented [h59]: This is new template language so I've added it in place of the old language.

Commented [ND60R59]: Thanks!

~~EA, comments provided by the public and others, and the professional judgment of the decision maker guided by the direction of NPS Management Policies (2006).~~

Fwd_ Consultation for Environmental Assessments....pdf

From:	Niosi, Daniel
To:	Daniel Noon
Cc:	Heather Rice
Subject:	Fwd: Consultation for Environmental Assessments under SO 3355 - Request for Concurrence by July 12
Date:	Monday, August 12, 2019 11:56:48 AM
Attachments:	Draft Mountain Goat Management Plan EA FONSI (2019_08_08).docx

FYI per your request.

Dan Niosi

Acting
Environmental Quality Chief/Regional Wilderness Coordinator
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Permanent
Project Manager/Education Coordinator
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---------- Forwarded message ---------
From: **Niosi, Daniel** <dan_niosi@nps.gov>
Date: Thu, Aug 8, 2019 at 9:28 PM
Subject: Re: Consultation for Environmental Assessments under SO 3355 - Request for Concurrence by July 12
To: Jacobsen, Dana <dana.jacobsen@sol.doi.gov>
Cc: Heather Rice <heather_rice@nps.gov>

Hello Dana,

(b) (5) [redacted]

[redacted] your concurrence on these EAs by 8/15, please let us know what your timeline might be so we can include that in the database updates.

Thanks Dana. If you have any questions or would like to discuss further, please just let me know.

Take care,
Dan

Dan Niosi
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On Thu, Jul 18, 2019 at 3:31 PM Niosi, Daniel <dan_niosi@nps.gov> wrote:

Hello Dana,

(b) (5) [redacted]

- [redacted]
- [redacted]

Please let me know if you need anything else in order to provide your concurrence with the path forward for completing these EAs.

Thanks and take care,
Dan

Dan Niosi

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On Mon, Jul 8, 2019 at 12:01 PM Jacobsen, Dana <dana.jacobsen@sol.doi.gov> wrote:

Hi all,

(b) (5) [redacted]

Dana

On Fri, Jul 5, 2019 at 12:31 PM Karan Dunnigan <karan.dunnigan@sol.doi.gov> wrote:

Hi, Dan -

(b) (5) [redacted]

[redacted].

Best,

Sent from my iPad

On Jul 5, 2019, at 11:30 AM, Niosi, Daniel <dan_niosi@nps.gov> wrote:

(b) (5) [redacted]

Thanks, and have a great weekend,

Dan

Dan Niosi

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<DS signed EA Memo.pdf>

--
Dana Jacobsen
Assistant Regional Solicitor, Parks and Wildlife
Office of the Solicitor
755 Parfet, Suite 151
Lakewood, CO 80215
(303) 445-0639
Dana.Jacobsen@sol.doi.gov

Draft Mountain Goat Management Plan EA FONSI _6.pdf

DRAFT

[redacted]

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

_____

Gopaul Noojibail Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

_____

[NAME] Date
Regional Director
DOI Unified Region 7 – Upper Colorado Basin

38

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. To the extent necessary, relevant sections of the EA are incorporated by reference below.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) with modifications to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities.

The selected alternative will implement a management plan to remove non-native mountain goats from the park using a combination of non-lethal and lethal removal methods.

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction efforts via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition from intensive to tactical monitoring and removal. Tactical monitoring and removal efforts will occur year round.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is

uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring will continue and it may be necessary to employ several monitoring methods simultaneously in combination. Removal efforts will likely be ground-based and tactical.

LIVE CAPTURE AND TRANSLOCATION

Mountain goats will be captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will work closely with appropriate state wildlife and federal land management agencies or other approved recipients to plan and execute the translocations. Recipients will generally be responsible for transport and associated costs to move mountain goats from frontcountry staging areas within the park to release sites outside of the park. Mountain goats could be captured over the course of 3−5 years, with most activity occurring within the first 1−2 years. Capture operations will occur between December and March. Captured mountain goats will be transported by helicopter to frontcountry staging areas, where they will be transferred to approved recipients. Capture and translocation is projected to involve approximately 32% of the 125 mountain goats. However, the number of mountain goats captured and translocated could be more or less, depending on capture success and the interest from outside entities to receive mountain goats and their ability to cover transport, disease testing, and associated expenses.

Live capture operations will occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats will be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath the helicopter in a transport bag to a frontcountry staging area. NPS personnel will coordinate with Wyoming Game and Fish Department (WGFD) personnel and others to facilitate the transfer of mountain goats to recipients. Recipients will be responsible for acquiring transport or other permits as necessary. In accordance with standard operating procedures, NPS Management Policies, the Animal Welfare Act, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the American Veterinary Medical Association (AVMA). After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park. Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.

When translocation and lethal removal activities occur in the same management period, live capture and translocation activities will generally occur prior to lethal removal. This order of actions is desirable because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and a significant portion of the population is in terrain where capture can be achieved safely. As the removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. As capture operations progress, the goats are likely to shift their distribution to areas of rougher terrain where safe capture is difficult. If capture efficiency exceeds typical effort for capturing goats (2014−2016 =

2.5 hours/goat), helicopter-supported translocation operations will cease, and shift to lethal removal techniques.

LETHAL REMOVAL

Aerial-based lethal removal will be performed by federal personnel or contractors with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Mountain goats will be removed using firearms with non-lead ammunition from aerial- or the ground-based efforts. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats will be captured and euthanized. Aerial capture techniques will include darting or net-gunning from a helicopter. Ground-capture techniques will include ground darting or baiting goats to a drop net, clover trap, or snare. Aerially-captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot). Those captured using ground techniques will be dispatched on site. Animals will be dispatched by trained personnel following established and approved guidelines from the AVMA.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will also be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with the NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals

Operations Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially-based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

USE OF QUALIFIED VOLUNTEERS

The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved, but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures.

MOUNTAIN GOAT MONITORING

Monitoring activities will include temporary capture (helicopter based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, as well as possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards the natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During the aerial survey, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following established and approved capture and handling protocols. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries and baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. For example, given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter. Capture with transport will involve two backcountry landings per animal–one to pick the animal up and one to return it to its capture location.

EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

NPS wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

ESTIMATED COSTS OF IMPLEMENTATION

Based on the current mountain goat population estimate within the park (approx. 125 individuals), the estimated costs, in 2019 dollars, to implement the following phases of alternative C, as described on pages 2–3, are approximately $440,000 for the population reduction phase (68% lethal aerial removal, 16% lethal ground removal, and 16% translocation; years 1–5), approximately $64,000 for the post-reduction phase (years 6–7), and $21,000 annually for the maintenance phase (year 7 and beyond).

Rationale

Alternative C with modifications was selected because it best meets the purpose to:

- Aid in the conservation of a native population of Rocky Mountain bighorn sheep located within the park and
- Protect other park resources and values from the rapidly growing non-native mountain goat population.

The EA sufficiently addressed impacts to park resources resulting from ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. The EA was made available for public review and comment during a 30-day period from December 4–20, 2018 and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018 via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have "no potential to cause effect" on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park's determination via email response on April 9, 2018.

The park obtained a current species listed (dated June 29, 2019) from the Information Planning and Conservation (IPaC) website. In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. The USFWS was notified via email of a forthcoming request for informal consultation on this EA on July 8, 2019 and the Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS's understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park's "may affect, not likely to adversely affect" determination for federally listed species and designated critical habitat. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018 to solicit comments and concerns. Park leadership met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018 to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho

Tribes, Coeur D'Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during the implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identified 10 criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the criteria.

The following impact topics were dismissed in the EA because they were found to have no potential for significant impacts: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils, whitebark pine, and wilderness character; however, no potential for significant adverse impacts was identified.

Implementing the selected alternative will have short-term disruptions (several minutes to hours) of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat. Overall, the effects are expected to be beneficial, effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats.

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased, though not as rapidly when utilizing only lethal removal techniques. Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of

mountain goat carcasses. These carcasses will likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

ERRATA

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods. This revision does not change the effect of the analysis.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≥20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the undeveloped quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact would diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA:

Stafl, N. and M. I. O'Connor. 2015. American Pikas' (*Ochotona princeps*) Foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

RESPONSE TO SUBSTANTIVE PUBLIC COMMENTS

Response to public comments addresses substantive comments that were received during the public review period. Many comments addressed issues already adequately covered in the EA. Other comments addressed include mountain goat translocation, the use of qualified volunteers, mountain goat carcasses, and bighorn sheep management.

Several comments proposed the reconsideration of alternatives that were considered but dismissed. After receiving considerable public feedback, the preferred alternative was modified to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities. No changes were made in the assessment of environmental consequences.

The park only responded to substantive public comments; those comments and responses are provided below.

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in Campfires in the Canadian Rockies by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region. Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population. The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to "evaluate the species' current or potential impact on park resources." As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, and has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range, NPS policy is clear on the management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive

for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (of which is stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Because wolverine are a proposed species and not formally listed for protection under the ESA, the USFWS will not evaluate the park's assessment of the potential impacts to this species. However, on page 24 of the mountain goat management plan/EA, specific conservation measures are listed and aimed at reducing potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats.

Alternative C

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors would attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) whenever possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother. Placing adult mountain goats in zoos is not being considered.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS is actively evaluating options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after the recent efforts (2018–19) in Olympic National Park, as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. A tiered system of removals could unnecessarily extend time required to remove mountain goats from the Teton Range, thus was not incorporated into the use of qualified volunteers

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: The NPS plans to use firearms silencers whenever feasible, which would most likely include ground-based removals when visitors may be impacted by sounds of gunfire (e.g., uncommon removal of a goat during summer).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

Mitigation is an integral part of the environmental planning process that involves identifying measures to reduce, minimize, or correct impacts from the proposed action. In the plan the NPS has referred to mitigation measures as conservation measures. These measures or actions are intended to reduce the potential for adverse impacts on individual bighorn sheep and the population as a whole.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. This dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would be needed to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting, while the other NPS units generally allow hunting. Qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave national parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park and Grand Canyon National Park have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. Several National Battlefields and Historic Sites utilize professional sharpshooters to remove white-tailed deer. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates.

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified (see page 5). The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment “in such a manner and by such means as will leave them unimpaired” for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by the nativity (or non-nativity) of the mountain goat population(s) in question. In areas where mountain goats and bighorn sheep are naturally sympatric, both species may indeed coexist with expected “natural” population fluctuations because competitive overlap is limited by partitioning of habitats (niche). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goats populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on wildlife consumption of native high-elevation plants, vegetation community descriptions, mountain goat wallowing, and effects on soils and plants from the use of salt licks.

Response 30: The commenter correctly pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both Mountain goats and Bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep. The commenter also pointed out typos, caused by auto-correct, in scientific names of some native plants, and a different opinion on which forbs would be considered "tall" and commented on the degree of analysis of the effects of salt licks. While these final three comments are all valid, the adjustments suggested by the commenter, if made, would not change the impact analysis.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental

organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, then a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (See Response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would

continue to negatively impact park resources and values, including bighorn sheep and wilderness character.

Hunting outside the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their shift in management philosophy on management of mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Costs/Funding

Comment 38: Several commenters inquired as to the cost to implement each alternative and the sources of funding for each. One commenter was particularly interested in costs associated with live-capture of mountain goats to and transporting them to frontcountry processing sites.

Response 38: For Alternative A (no action), estimated costs to capture and monitor at least 10 goats/year the park would be approximately $8,500/goat (capture = $6,000/goat and GPS radio

collar = $2,500/collar), at least $2,000 of fixed wing time annually to aerially monitor goats in the summer, as well as approximately $10,000 in administrative costs at annual estimated cost of $97,000 for as long as park could commit to an effective monitoring program. For Alternative B (lethal control), estimated costs to lethally remove all goats would be approximately $300/goat (including carcass removal of half the goats killed), $22,000 of fixed wing time to assist and monitor removal efforts, as well as approximately $10,000 in administrative costs at an estimated cost of $66,000 for the first year of implementation with approximately 90% of population removed. For implementation of Alternative C, please see the "Estimated Costs of Implementation" section on page 7.

Other mountain goat populations

Comment 39: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 39: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 40: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 40: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

The Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was not referenced in the mountain goat management plan/EA because the NPS plan did not propose

any actions related to the interaction of these two species. This group and the recommendations outlined in the plan focus on issues of concern related to interactions between bighorn sheep and domestic sheep.

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APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archaeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the Cultural Resources Program Manager for record keeping purposes and to pursue archaeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archaeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park archaeologist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources. See Cultural Resources mitigation measures for additional requirements.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored throughout the season and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.

- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.

- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)
- Volunteers will ensure carcass or gut piles are >100 yards from trails, campsites, camping zones, cabins, etc. If this is not practical, skilled volunteers will report the location of any remains to NPS so a temporary closure can be implemented.

Appendix B: NON-IMPAIRMENT DETERMINATION

Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in

relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in the number of predators and scavengers for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep such a response if not anticipated for several reasons. Scavenger and predator populations typically increase via immigration (individuals moving into an area) or demographically (food surplus leading to improved condition of adults, larger litters, and higher survival of offspring). In mid-winter, the

wolverine is the species most likely to be present in the high elevations of the project area where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because mountain goats and bighorn sheep currently occur in spatially distinct areas and the availability of carrion may divert predation away from live prey. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Though mountain goat removal activities under the selected alternative will result in short-term adverse impacts from disturbance and displacement, bighorn sheep at the population level will not be adversely impacted. Therefore, it has been determined that the selected alternative will not result in an impairment to bighorn sheep.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Though mountain goat removal activities will result in short-term adverse impacts from disturbance to vegetation and soils in discrete areas of the park, the selected alternative will not result in an impairment on vegetation and soils.

Wilderness Character

Under the selected alternative, field activities that involve the removal of mountain goats will likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats will continue for a period of 20 or more years. These removal activities will have a negative effect on the untrammeled quality of wilderness. There will be a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. There will be a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. There will be a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other

field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character (collectively the wilderness qualities described above) will be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact will diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

Though mountain goat removal activities will result in adverse impacts on the untrammeled, undeveloped and solitude or primitive and unconfined recreation qualities of wilderness, the selected alternative will not result in an impairment on wilderness character.

Conclusion

As guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the superintendent's professional judgment that implementation of the selected alternative will not constitute impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. This conclusion is based on consideration of the park's purpose and significance, a thorough analysis of the environmental impacts described in the EA, comments provided by the public and others, and the professional judgment of the decision maker guided by the direction of NPS Management Policies (2006).

Re_ Silencers.pdf

From: Nash, Michael
To: Dewey, Sarah
Subject: Re: Silencers
Date: Tuesday, August 13, 2019 11:49:12 AM

Yes, skilled volunteers, rangers and SRM staff may use silencers/suppressors to remove mountain goats. Wyoming hunting regulations "silencers/suppressors may be used during the legal taking of any game animal" per page 5 of the Wyoming hunter regulations. While our project is a management action this is a "legal" take. The rangers can use them for resource management purposes but we don't have them as we need an enhancement for law enforcement purposes. I intent to ask Sue for a funding source as we would like to purchase some silencers/suppressors and magnification scopes for our AR10 rifles, especially if we will be involved in this project. This is probably more info than you needed...happy to chat more

Michael A. Nash
Chief Park Ranger
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway

On Mon, Aug 12, 2019 at 3:55 PM Dewey, Sarah <sarah_dewey@nps.gov> wrote:

> Hey Michael,
>
> Question for you related to the mountain goat management plan. Would it be permissible/legal for skilled volunteers to use silencers while using firearms to remove mountain goats under our direction? We indicated that, when feasible, we would use silences to mitigate impacts to the acoustic environment. I assume that NPS personnel or our contractors could, but wanted to understand what private citizens signed up as volunteers would be authorized to do. Thanks.
>
> Sarah
>
> --
> Sarah Dewey, Wildlife Biologist
> Grand Teton National Park
> Science and Resource Management
> P.O. Box 170
> Moose, WY 83012
> (307) 739-3488

Re_ Mountain Goat Management Plan_EA Public Cor....pdf

From:	Noon, Daniel
To:	McCloskey, Kelly
Cc:	McDannold, Jason; Susan (Sue) Consolo-Murphy
Subject:	Re: Mountain Goat Management Plan/EA Public Correspondence on Vegetation Impacts
Date:	Tuesday, August 13, 2019 4:39:15 PM
Attachments:	Mountain Goat Management Plan-EA Public Correspondence 203 (highlighted).pdf Final GRTE MOGO EA 2018-12-03 (accessible).pdf

---

Hi Kelly,

Thanks for your assistance with revising the response to comment 30 of the FONSI Here is the response you provided earlier:

> **Comment 30:** One commenter provided correction-related input on wildlife consumption of native high-elevation plants, vegetation community descriptions, mountain goat wallowing, and effects on soils and plants from the use of salt licks.
>
> **Response 30:** The commenter correctly pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both Mountain goats and Bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep. The commenter also pointed out typos, caused by auto-correct, in scientific names of some native plants, and a different opinion on which forbs would be considered "tall" and commented on the degree of analysis of the effects of salt licks. While these final three comments are all valid, the adjustments suggested by the commenter, if made, would not change the impact analysis.

The Intermountain Region Environmental Quality Division provided the following comments:

- **commented on the degree of analysis:** What was the comment? Please clarify so you can respond to it here.
- **While these final three comments are all valid, the adjustments suggested by the commenter, if made, would not change the impact analysis:** If this is the case, why were the corrections not made to the EA in the Errata?

Attached is the highlighted public comment that was provided to the EA for reference.

Moving the revisions forward, I recommend the following:

1. Revise the response above by removing references to "the commenter" and focus the response specifically on the three types of comments provided: (1) wildlife consumption of high-elevation plants, (2) vegetation community descriptions, (3) mountain goat wallowing, and (4) salt lick impacts on soils and vegetation. If there are errors, we can reference the changes in the errata section in the response. We should also reiterate that the changes in the errata section would not change the extent, duration, or intensity of impacts on soils and vegetation .
2. If there are specific errors referenced in the response (e.g. incorrect scientific names of plants, vegetation community descriptions, analyses on wallowing and salt lick impacts), please provide me the corrected text and the location of the original scientific names/statements/paragraphs in the EA so I can insert it in the Errata section of the FONSI. Attached is the EA for reference.

I'll be in the office if you have any questions. Thanks again!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Mon, Jul 29, 2019 at 2:24 PM McCloskey, Kelly <kelly_mccloskey@nps.gov> wrote:

> Please see attached - if you require further detail or info please let me know.
> Thanks,
> Kelly
>
> *Kelly McCloskey, PhD*
> *Vegetation Ecology and Management*
> *Grand Teton National Park*
> *307-739-3679 office*
> *307-413-1285 mobile*
>
> On Mon, Jul 29, 2019 at 11:16 AM Noon, Daniel <daniel_noon@nps.gov> wrote:
>
> > Hi Kelly,
> >
> > Please email me a consolidated written response to the following comment:
> >
> > > "One commenter provided correction-related input on wildlife consumption of native high-elevation plants, vegetation community descriptions, mountain goat wallowing, and effects on soils and plants from the use of salt licks."
> >
> > If there are editorial corrections needed, you can send these to me as well and I'll incorporate it into the errata section of the FONSI.
> >
> > Thanks!
> >
> > Daniel Noon
> > Chief of Planning and Environmental Compliance
> > Grand Teton National Park
> > John D. Rockefeller, Jr. Memorial Parkway
> > (307) 739-3465
> > Email: daniel_noon@nps.gov
> >
> > On Mon, Jul 29, 2019 at 10:30 AM McCloskey, Kelly <kelly_mccloskey@nps.gov> wrote:
> >
> > > Daniel -
> > > Looking at this now - how/where would you like the adjustments? Expect to make them starting at 12:30 today.

Thanks
K

Kelly McCloskey, PhD
Vegetation Ecology and Management
Grand Teton National Park
307-739-3679 office
307-413-1285 mobile

On Wed, Jul 24, 2019 at 1:17 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

Hi Jason,

Please disregard. I meant to send this only to Kelly, since it's related to native vegetation communities and the mountain goat management plan/EA analysis.

Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Wed, Jul 24, 2019 at 1:11 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

Kelly and Jason,

Have you had the opportunity to review the attached public correspondence on the Mountain Goat Management Plan/EA and determine if a response or corrections to the plan/EA are needed as it relates to vegetation (see highlighted areas)?

We are about ready to complete the draft FONSI this week. Please contact me to discuss further at your earliest convenience.

Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Thu, Apr 4, 2019 at 3:56 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

Kelly and Jason,

Attached is the correspondence that I spoke about during our meeting today.

When the have the opportunity, please see the highlighted section and provide me a response elaborating on which (if any) should have responses in the Mountain Goat Management Plan/EA decision document. The latest plan/EA is on the P drive in the following directory:

P:\Planning Office\Mtn Goat Management Plan EA\0. REVISED PUBLIC READY PLAN-EA (2018-11-16)\Plan-EA

Thanks for your time of this. I greatly appreciate it!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

Mountain Goat Management Plan-EA Public Corres.pdf

PEPC Project ID: 47959, DocumentID: 90336
Correspondence: 203

Author Information

Keep Private:	No
Name:	Mike Merigliano
Organization:	
Organization Type:	I-Unaffiliated Individual
Address:	P.O. Box 453 Driggs, ID 83422 USA
E-mail:	

Correspondence Information

Status:New	Park Correspondence Log:
Date Sent: Jan 31, 2019	Date Received: Feb 22, 2019
Number of Signatures: 1	Form Letter: No

Notes: Original correspondence is attached.

Correspondence Text

Denise Germann
Grand Teton National Park
P. 0. Box 170
Moose, Wyoming
83012

January 31, 2019

RE: Mountain Goat Management Plan Environmental Assessment, December 2018

Dear Ms. Germann,,

My sincere thanks to the preparers' work on the goat plan. I fully support mountain goat removal from Grand Teton National Park, and although out of park service jurisdiction, removing all mountain goats in the nearby Targhee National Forest, including the Snake River Range in Wyoming and Idaho. The purpose, presented in the very first paragraph, is clear and convincing, and there is more-detailed support throughout the plan. However, there is some room for improvement. Here are my comments and questions.

Mountain goat demography and monitoring history

Goat demography is mentioned in several places, and in essence they were first seen nearly 40 years ago, and have recently been documented as a breeding population, with breeding beginning "in the mid-to late 2000's". But the length and techniques of monitoring the goat population is unclear, and risk assessment depends on how long the goats have been actually breeding. Figure 2, which shows mapped

goat locations from 1977 to 2008, and 2008 to present, provides no insight into how observations were made, and how they compare to the intensive monitoring that began in 2014. Why would breeding be delayed until recently? The post-2008 goat observations are more numerous on the map, but it is not clear if this is proportional to observation effort or there are simply more goats since 2008. Is there a biological reason that goats would not have bred in or near the park for over 30 years, and then suddenly start breeding?

My impression from travels in the Teton Range from the late 1970's to present is that the goat population has increased over the years, but I wonder how much is due to breeding in the resident (GTNP, Targhee NF) population as compared to immigration from the Snake River Range. Obviously, if the increase is due largely to local breeding, then local control will be more effective than if goat immigration has increased over the years. One can speculate on the reasons for the increase, and the NPS has apparently made some guesses as to what is happening. Some guessing is usual for managing wildlife in remote areas, but the plan's statements about goat population dynamics don't reveal much uncertainty.

More detail on monitoring history and techniques would make the claims about breeding more credible, and help define population-rebound after control efforts

Acoustic Environment
The plan states that sound suppression techniques (silencers?) could be used if necessary to reduce gunshot noise. There could be undetected people, sheep, or other wildlife near control actions that are sensitive to gunshots, so why not use silencers all of the time?

Bighorn sheep reactions to control efforts
Goat control efforts may impact bighorn sheep (BHS) habit use and increase their stress, especially in winter when most if not all control actions are planned. The plan mentions how goats could avoid areas that NPS-staff visit repeatedly. Bighorn sheep could behave the same way under the same circumstances, although in winter, the goats and BHS may be far enough away from each other so that control efforts may not impact BHS. The conservation measures (pages 22 to 24) Performing control efforts in winter makes sense, and is well-explained in the plan. But a potential downside for the winter timing for control is the potential impact in bighorn sheep. The mapped goat and BHS locations overlap (Figures 2 and 4), and although most of the mapped goat locations are in the central Teton Range, and the concentration of goats here could be an artifact of where most people go.

The plan lists mitigation measures to lessen impacts on BHS, and these look reasonable and could work, but much of the rationale for winter timing is to avoid impact to a broad array of wildlife and park visitors, which are more common in the summer. Even though goats are killed in winter, their carcasses could be available to bears and other wildlife in summer. The plan indicates goat carcass monitoring and possible demolition. This would require numerous visits, and it is not clear if a helicopter would be used for this. Perhaps scavengers will eat most of the goat carrion before bears arrive in the high country, thus minimizing bear conflicts and strengthening the justification for winter control. It's possible that the higher, historic sheep populations, with proportional mortality, could have provided more carrion and a higher wolverine population. Goat carrion would be temporary, but could have an impact on scavengers, including wolverines. If BHS somehow rebound fast enough, higher scavenger population could be maintained.

Obviously, the NPS has a dilemma, which I assume you are well-aware of, and that is the animal most

at-risk is the big horn sheep, and they are most vulnerable to human encounters in winter than in summer. Yet control efforts are in the winter to avoid impacts on people and other animals, which arguably are less stressed in summer then BHS are in winter. It would be an ironic nightmare if BHS suffer substantially because of goat control in winter, in order to avoid another nightmare, that being park visitors seeing goats killed during a gorgeous summer stroll, and complaining about it to the NPS and Congress.

Somewhat related to this is the impact of backcountry skiers on BHS habitat use, and possible actions to limit this impact by area closures. It could look like a double-standard if the NPS shoots goats in winter, flying around in helicopters to do so, yet backcountry skiers are disturbing BHS and excluded from some areas because of winter disturbance of BHS. Over the last 35 years, I have enjoyed the Teton backcountry on skis, yet I fully agree with putting limitations on this activity if it interferes with BHS, and I would also accept the NPS doing winter control, as the BHS is much more important to me than a stroll across the park on skis. But there could be a large resistance from the skier community at-large to be excluded from the backcountry for the same reason that the NPS is actually doing to control goats, and it may become difficult to close areas that should be.

Alternatives Considered but Dismissed
In general, this section would be more efficient if the last statement, the succinct reasoning within an alternative's explanation, is put first, rather than a meandering explanation that leads to it. The reasoning at the end makes for a much-better topic sentence.

Use of unskilled volunteers:
Although I agree that using unskilled volunteers to kill goats could be a "goat rope", in dismissing this option, the planners assume that the volunteers would be a substitute for skilled workers. I am not aware of the context for this alternative, but the unskilled volunteers could be additive to the skilled workers, not just a substitute, and this option is not addressed in the plan. If there are highly motivated "unskilled" volunteers that are actually good marksmen and can get around in the mountains, they could benefit the NPS' efforts, and get more people connected to the park. This would be a rather dramatic version of citizen science. Personally, I don't have strong feelings about this either way, but if the opportunity arose, I would probably participate.

Uncertainty about source of migrating mountain goats
The closest historic population of mountain goats is in the Snake River Range (the Palisades), and the plan acknowledges them as a source within the History and Status of Mountain Goats section. But within the Cumulative Effects section under Alternative A, goat dispersal is deemed uncertain, stating that the potential exists for them to disperse from the Snake River Range, but the potential is unknown. Given that they are non-native to the Tetons, they had to come from somewhere, and if not the Snake River Range, where else? Northeast Yellowstone NP is another potential source, but do these goats carry pathogens? The plan should be consistent about the degree of confidence about the source of migrating goats.
Cumulative Impacts for alternatives
The plan states that net cumulative impacts are negative for all alternatives, and although not quantified, my impression from the plan is that alternative A is the most negative, so much so that BHS may not persist. That is enough to prefer either B or C, but will NPS management allow for a stable or increasing BHS population? Both narratives for Band C mention that there are other stressors, but they are not mentioned because they are not covered by the plan. They should be included so readers could form their own judgments.

Vegetation
The second paragraph under Affected Environment, states that high-elevation plants flower and reproduce during a short period of summer, and if they are consumed, they will be destroyed an not self-replacing on the landscape. This is not a credible statement. Natural, obvious herbivores in the subalpine and alpine zones are bighorn sheep, mule deer, and some places (not too rocky, etc.), pocket gophers. The latter can be quite prolific and besides eating the plants, they turn over much of the upper soil profile. Goats add to this, but the plan's statement implies that no herbivory occurs within high elevations. His statement also occurs within the Environmental Consequences section. An increase in BHS, a desired outcome, will increase herbivory on plants

In the community descriptions, some of the scientific names are mis-spelled or mis-punctuated (trivial, but worth fixing). Under the sub-alpine description, most species listed under 'tall forb" are not commonly considered as such (Epilobium, sp., if it is actually angustifolium, is quite tall). Some of the species listed in the Montane herbaceous meadow description are tall forbs (e.g., Ligusticum, Rudbeckia, Delphinium occidentalis, Heracleum), but they are not designated as such while shorter ones are.

Under the section on mountain goat wallows (page 43), there is a contradiction in the statement: "This condition removes vascular and non-vascular plant material resulting in no growth, no photosynthesis, and an open area available for colonization by other plant species, native or nonnative." With colonization of other plant species, there will be photosynthesis and plant growth. Although mountain goats add to their disturbance, pocket gophers churn-up a lot of soil. Plants on these churned-up sites are adapted to consistent disturbance. Do mountain goats wallow in areas that are particularly sensitive to soils disturbance?

Salt licks to attract goats could affect soils and plants in a noticeable way. If ordinary salt is used, sodium can weaken soil structure, which is typically weak in mountain soils anyway because they are so young and undeveloped, and any type of salt will affect water potentials in the soil via their osmotic effects. The plan is attentive to trampling etc. from NPS staff and helicopters, but salt will have a longer-term effect than simple trampling and deserves more attention.

Under Wilderness Character, The acronym MRA should be spelled out, especially because its supporting document is missing from the list of cited publications

Consultation and Coordination
The number of entities consulted is admirable. What is missing is a focus on which ones would possible accept captured mountain goats, and which ones would coordinate with and enhance the NPS efforts to remove goats. Obviously, the viability of Alternative C hinges on the acceptance, and the efficacy of alternatives B and C depend on mountain goat populations near Grand Teton National Park. Perhaps there are developments occurring not documented here about Wyoming Fish & Game and Idaho Game and Fish department's ideas on goats in their jurisdictions, and any encouragement by the Targhee National Forest. The same argument as the NPS is using to remove goats from GTNP can and should be used for their removal from the Jedediah Smith Wilderness, and although murkier from a policy standpoint, the Palisades Wilderness Study area and adjacent areas.

Finally, I am so glad that someone is finally taking the lead on mountain goat removal in the Teton Range, and the NPS's plan is a great start. But a multi-agency effort to completely remove the goats in

NW Wyoming should start as soon as possible.
Sincerely,

Mike Merigliano

Final GRTE MOGO EA 2018-12-03 (accessible).pdf

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway

Mountain Goat Management Plan
Environmental Assessment
December 2018

NPS Photo/M. Osipchuk

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CHAPTER 1: Purpose and Need for Action

The Proposal

The National Park Service (NPS) is proposing to implement a plan to remove exotic (nonnative) mountain goats from Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (Figure 1); collectively, the park. The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep (*Ovis canadensis*) whose status is tenuous and 2) protect other park resources and values from the rapidly growing mountain goat population.

Per NPS policy (NPS 2006, sections 4.1.5 and 4.4.4), the park has a responsibility to prevent displacement of a native population by an exotic population, maintain the ecological role of native species, and reduce the potential for local extinction of a species, when feasible.

The removal of mountain goats from the park would be accomplished through the use of lethal and/or non-lethal means. The goal is to remove the mountain goat population as quickly as possible to minimize impacts to native species, ecological communities, and visitors. Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in one to five years.

The NPS Organic Act of 1916 and Management Policies 2006 (NPS 2006, sections 4.1.5 and 4.4.4) support the maintenance and restoration of natural systems and the control of exotic species. The Organic Act directs the National Park Service to conserve resources in their natural condition, leaving them unimpaired for the enjoyment of future generations. NPS Management Policies (section 4.4.4) also states that non-native species will not be allowed to displace native species if this displacement can be prevented. More detail is provided in section 4.4.4.2: "All exotic plant and animal species that are not maintained to meet an identified park purpose will be managed – up to and including eradication – if (1) control is prudent and feasible, and (2) the exotic species…interferes with natural processes and the perpetuation of natural features, native species or natural habitats…" (which is one of seven listed characteristics which indicate management is needed). It further states "High priority will be given to managing exotic species that have, or potentially could have, a substantial impact on park resources, and that can reasonably be expected to be successfully controlled."

Need for the Proposal

Mountain goats are not native to the Greater Yellowstone Ecosystem (GYE; Skinner 1926, Hayden 1989, Laundré 1990, McWhirter and Roop 2007, Flesch et al. 2016), an area that includes the park. The native range of mountain goats extends from southeastern Alaska south to the Columbia River in Washington; east into Idaho and western Montana; and north to southern Yukon (http://explorer.natureserve.org/servlet/NatureServe?searchName=oreamnos+americanus; distribution section; Festa-Bianchet and Côté 2008, Rideout and Hoffman 1975).

Resident mountain goats within the park are likely dispersers from a population introduced southwest of the Teton Range in the late 1960s and early 1970s. First observed in the Teton Range in 1979, they have now established a breeding population that is growing rapidly.

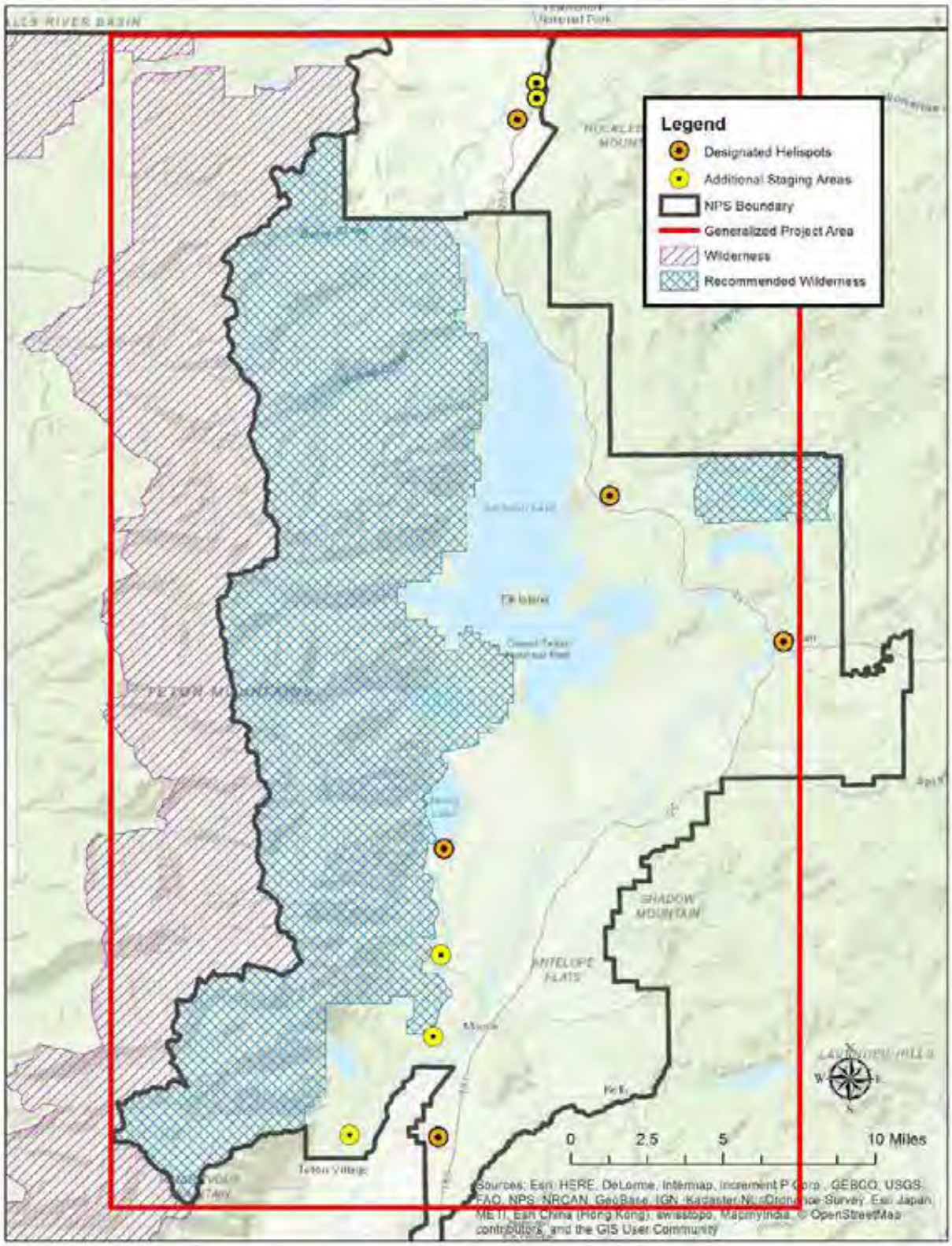

Figure 1. Wilderness areas (designated and recommended, managed as wilderness), staging areas/helispots, and generalized project area (outlined in red), Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway, Wyoming, 2018.

Mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges.

Given the observed high productivity of mountain goats and their growing numbers, the NPS has heightened concerns for the native bighorn sheep population, one of the smallest and most isolated in Wyoming, and is committed to ensuring the herd's long-term persistence. Recent monitoring suggests this bighorn herd has undergone a recent population decline (Wyoming Game and Fish Department (WGFD) 2009−2016) and is facing multiple environmental stressors that put its future in question. The bighorn sheep herd has never been extirpated and repopulated or augmented. Consequently, it is of high conservation value to the park, adjacent land and wildlife managers, and visitors whom enjoy knowing that a healthy population of this native species is present and persists within the park.

Without intervention, the mountain goat population is expected to grow rapidly and expand into habitats important to bighorn sheep. Biologists estimate that suitable habitat within the Teton Range could support roughly 250–400 mountain goats (DeVoe 2015), a number 2.5 to 4 times current population estimates. Given current mountain goat distribution and abundance, and expected population growth, the NPS is also concerned about current and potential increased impacts on other resources (e.g., vegetation and soils) and wilderness character.

Although mountain goats were first seen in the Teton Range nearly four decades ago, it is only recently that a breeding population has been documented. Prompt action is needed to remove or significantly reduce the non-native goats from the park to prevent the rapidly growing and expanding mountain goat population from displacing the small and declining population of native bighorn sheep.

History and Status of Exotic Mountain Goats

As noted above, the current population of mountain goats that resides in the Teton Range is likely derived from individuals that dispersed from a population introduced into the Snake River Range in Idaho more than 45 years ago. Based on consistent observations of adult female mountain goats with young of the year starting in 2008 and a growing number of mountain goat reports since then (Figure 2), it is likely that a breeding population of mountain goats established in the Teton Range in the mid to late 2000s. Mountain goats are adapted to live in steep and rugged mountains year-round and select these areas as their habitat (DeVoe et al. 2015, Lowrey et al. 2017). The species is characterized by long bodies with stocky limbs and specialized hooves that provide the ability to move adeptly in this extreme habitat (Chadwick 1983). Mountain goats are generalist herbivores that consume a wide variety of grass, forb, shrub, moss, and tree species (Chadwick 1983, Houston et al. 1994). Home ranges are typically fixed throughout an adult's life and are larger for females than for males (Chadwick 1983, Festa-Bianchet and Côté 2008).

In 2014, NPS personnel began intensive monitoring of mountain goats to better understand their distribution, movements, and reproduction in the park. Survival of radio-collared mountain goats has been 100%, which is very high for adult ungulates. Although there is currently insufficient data to quantify the population growth rate of the Teton Range mountain goat population, all available information suggests that the population is growing. Approximately 100 mountain goats currently reside in the Teton Range. The apparently high twinning rate suggests that the population is not resource limited (Houston et al. 1994) and will continue to grow. Currently, the majority of mountain goats are found in the central portion of the Teton Range, which is an area of relatively low bighorn sheep occupancy (Figure 2), but they have begun to expand to the north and south. As of winter 2017−18, several mountain goats were observed wintering in the Mt. Hunt/Prospectors area – an important area for wintering bighorn sheep.

As the number of mountain goats in the Teton Range increases, their range will likely expand further into habitat currently occupied by bighorn sheep. Recent research on bighorn sheep and mountain goat habitat use in the GYE indicated high levels of niche and geographic overlap between the two species at the population scale (Lowrey et al. *in review*). A review of 34 bighorn sheep and mountain goat diet studies found evidence for high levels of diet overlap between the two species in both summer and winter (Laundré 1994). However, these findings were primarily obtained from single-species studies rather than comparative studies of both species on shared range. It has been hypothesized that where the distribution of bighorn sheep and mountain goats overlap, the species have narrower niches than where they do not occur together, a result of resource competition (Adams et al. 1982). This hypothesis has some support from the two studies of sympatric bighorn sheep and mountain goat diets that found lower levels of diet overlap than the other studies synthesized by Laundré (1994).

Mountain goats can host a variety of pathogens that can negatively affect bighorn sheep. Given the apparently similar habitat requirements of the two species, transmission of pathogens between species is viewed as a legitimate risk where the two species overlap. Indeed, this was recently documented in Nevada (Wolff et al. 2016). The transmission of bacterial respiratory pathogens from mountain goats to bighorn sheep is of particular concern for the viability of the Teton Range bighorn sheep herd. Respiratory pathogen sampling of mountain goats in the Teton Range has detected bacteria associated with bighorn sheep pneumonia (leukotoxigenic *Bibersteinia trehalosi* and leukotoxigenic *Mannheimia spp.*), in five of 14 animals sampled since 2014. In the absence of other respiratory pathogens, these bacteria are thought to pose only a minor risk to bighorn sheep. However, the likely source population of the goats in the park (Snake River Range population; Figure 2) is known to host several additional respiratory pathogens (*Mycoplasma ovipneumoniae,* and leukotoxigenic *Mannheimia haemolytica;* Lowrey et al. 2018) that collectively pose a high risk of disease to bighorn sheep in the Teton Range. Thus, the lack of detection of these pathogens in the modest sample (n = 14) of Teton Range mountain goats should be interpreted with caution. An effective vaccine against the pneumonia pathogens in bighorn sheep has not been developed. If an effective vaccine existed, delivering it to a sufficient number of the park's bighorn sheep would not be feasible because the animals spend the entire year in remote areas with difficult access.

In northwest Wyoming and adjacent Idaho, mountain goats can be hunted outside of the park in three hunt areas (Figure 3). Wyoming Hunt Area 2 was expanded in 2014 to include the west slope of the Teton Range adjacent to the park. Current Wyoming statute only allows hunters to harvest one mountain goat over their lifetime. Although hunters can harvest a mountain goat on the west side of the Teton Range, due to the accessibility and once-in-a-lifetime restriction, none have been harvested in that portion of the hunt area to date.

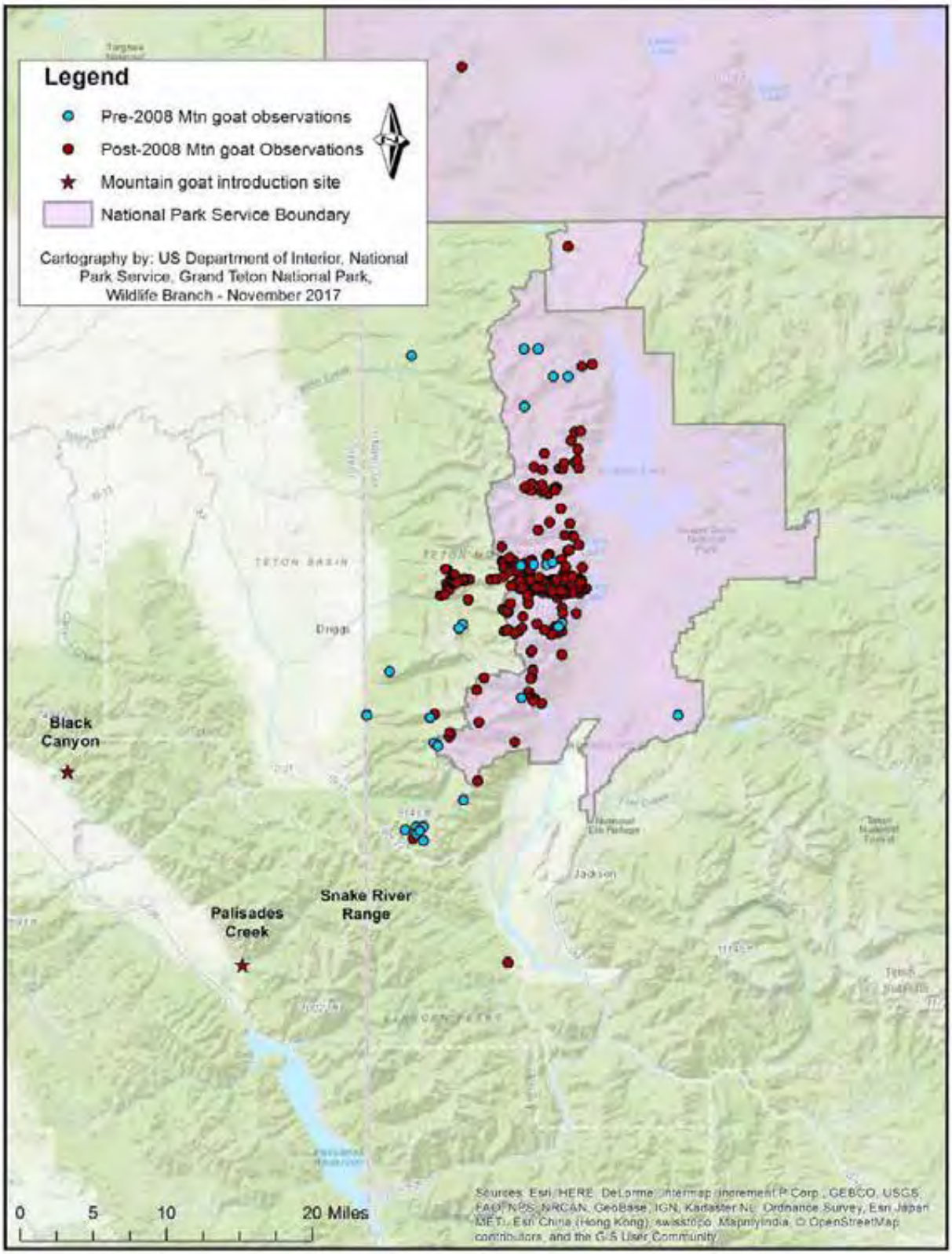

Figure 2. Observations of mountain goats in the Teton Range, 1977−2016.

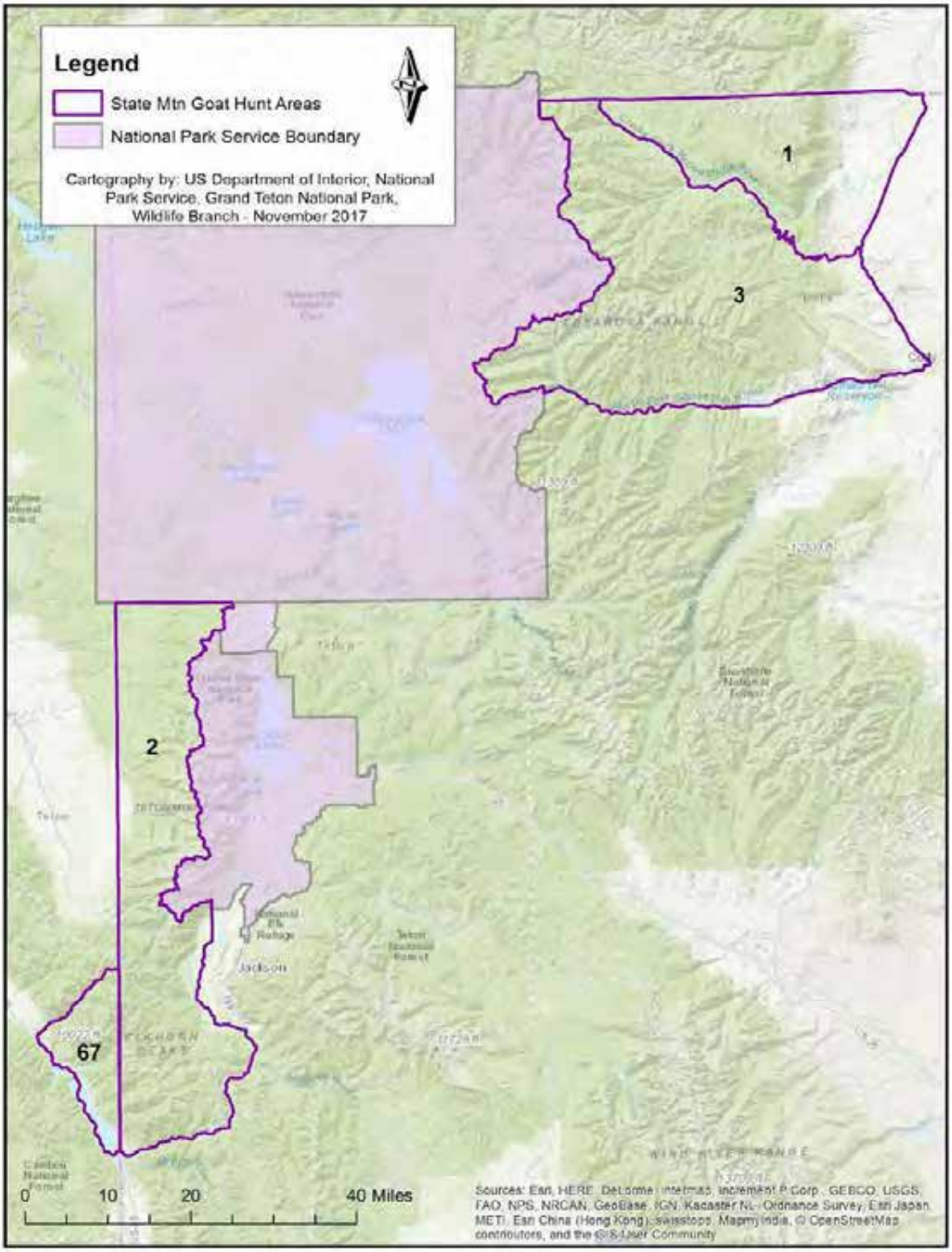

Figure 3. Wyoming and Idaho Mountain Goat Hunt Areas

Issues and Impact Topics Considered

The following topics are carried forward for further analysis in this EA:

- Bighorn Sheep
- Vegetation and Soils
- Whitebark Pine
- Wilderness Character

When determining whether to retain an impact topic for more detailed analysis in this EA, the NPS considered whether or not: the potential environmental impacts to the resource are central to the proposal or of critical importance; a detailed analysis of these impacts is necessary to make a reasoned choice between alternatives; and there could be significant impacts to resources. Because the following impact topics met one or more of these considerations, they were retained for further analysis in this EA.

Issues and Impact Topics Dismissed

Using the same considerations noted previously, the following topics were determined not to warrant more detailed analysis and were dismissed from further analysis in this EA. These topics are not retained for consideration because they are not (1) central to the proposal or of critical importance, (2) necessary to make a reasoned choice between alternatives, (3) a big point of contention among the public or other agencies, or (4) potentially significant impacts associated with the issue. A brief rationale for dismissal is provided for each topic.

Acoustic Environment

Natural soundscapes exist in the absence of human-caused sound. An intact natural soundscape enhances visitor experience and allows for natural functioning of wildlife communication. NPS policies require park managers to protect and restore the natural conditions and soundscapes of parks.

The relative loudness of sounds as perceived by the human ear is expressed using sound levels in units of A-weighted decibels, abbreviated dBA (OSHA 2013). A table of common sound sources and their sound levels is provided below:

Common Sound Sources	Similar Sounds Sources from other NPS Units	Sound Level (dBA)
Train horn at 1 meter	Military jet at 100 meters AGL (Yukon-Charley Rivers National Preserve)	120
Jackhammer at 2 meters	Thunder (Arches National Park)	100
Curbside of busy street	Cruiser motorcycle at 15 meters (Blue Ridge Parkway)	80
Busy restaurant	Conversation at 5 meters (Whitman Mission National Historic Site)	60
Residential area at night	Crickets at 5 meters (Zion National Park)	40
Whispering	Leaves rustling (Canyonlands National Park)	20
Human breathing at 3 meters	Volcano crater (Haleakalā National Park)	10

Table 1. Common sound sources and levels

The following values illustrate some key sound level thresholds and the effects that they have on humans:

- Natural Ambient Sound Level (dBA) – Baseline for current conditions
- Existing Ambient Sound Level (dBA) – Baseline for assessment of impacts
- 52 dBA – Raised voice speech interference at 10 meters (EPA 1974)
- 60 dBA – Normal voice speech interference at 2 meters (EPA 1974)

The use of helicopters, fixed-wing aircraft, and firearms would result in noise that would be temporary and limited in duration but could in turn impact visitors, wildlife, and wilderness character within the park. Potential impacts on the acoustic environment were analyzed using median natural and existing ambient sound levels (26 and 29 dBA, NPS 2010), along with thresholds for disturbance to humans and wildlife from human-caused noise. Between 2007 and 2015, aircraft noise in the summer (July 15−August 15) and winter months (January) were audible a small portion (approximately 6 and 18%, respectively) of the 25-day sampling periods in the northern area of the park (NPS 2015a). The vast majority of aircraft operations that occur within and over the park/parkway originate at the Jackson Hole Airport, and are audible ≤35% of the day. There are also high, transient aircraft flying over the park/parkway daily (audible approximately 7% of a 15-hour day (0700−2200 hours; NPS 2010). Other aircraft operations are not consistently reported to nor tracked by the NPS.

Since helicopter noise impacts (intensity, distance, and duration) are substantially greater than the intensity of noise generated from fixed-winged aircraft overflights, the following acoustic assessment focuses on helicopter sound level intensities. Based on reported data (FAA 1982), the maximum sound level (L_{max}) from a hovering, light helicopter would be approximately 75-78 dBA at a slant distance of 500 feet and 68-71 dBA at 1,000 feet. At a slant distance of 500 feet, up to 18 acres could be impacted with L_{max} at or above 75-78 dBA. At 1,000 feet, up to 72 acres could be impacted with L_{max} or above 68-71 dBA. Helicopter noise would affect the acoustic environment over distances of up to approximately 3.5 miles before maximum sound levels attenuate to existing ambient levels. Helicopter noise would likely not be noticeable to humans and wildlife beyond a distance of 3.5 miles. At 2,000 feet (up to 290 acres), L_{max} could reach or exceed 60 dBA, the threshold for normal voice speech interference, e.g. for hikers. At distances less than 4,000 feet (up to 1,150 acres), L_{max} could reach or exceed 52 dBA, the threshold for interpretive speech interference.

Other sources of noise include gunshots and ground vehicles. Noise from ground vehicles would be restricted to existing roads and not substantially increase noise. The minimum number of gunshots sufficient to remove animals would be limited to the area where a control event is occurring. The majority of gunshots would coincide with the use of helicopters. For a fraction of a second, peak levels from an individual gunshot can reach 140 decibels at very close range. Using impulsive time weighting, gunshot sound pressure levels typically vary from 120-127 dBA at 10m from the muzzle (downrange) and will decay at a minimum rate of 6 dBA per doubling of distance (RCMP 1999). Generally, gunshots would not be heard by most visitors because 1) control events would mostly occur during period of low visitor use (i.e., winter) and 2) visitors would not be allowed into areas where active shooting was occurring. If necessary, sound suppression techniques would be used to reduce gunshot noise.

Aerial mountain goat management operations would take place primarily during the late fall and winter months (mid-December to early March) where ≤1 percent of the total annual backcountry visitation occurs (NPS 2017). In most areas of the park, noise from helicopters would not be audible. For areas near where helicopters are operating, noise would only be audible a fraction of its operation, a period of up to 8 hours per day over a maximum of 35 days (Alternative B) and 50 days (Alternative C) annually. The number of aerial operations would substantially decrease after one to five years as the mountain goat population is reduced. Under typical conditions, sounds of helicopters and gunfire would not be heard ≥3.5 miles away.

To ensure visitor safety, these areas of operation would likely be under temporary closures, thus greatly reducing the likelihood of visitors being affected by intensive short-term aerial flight operations and gunshot noise. To mitigate these affects, park staff would provide advance notifications of scheduled aerial and ground field activities and temporary closures. These notifications would provide an opportunity for visitors to seek alternative arrangements.

Visitors recreating outside of but close to a closure area should be able to verbally communicate to one another, but could hear a distant helicopter, fixed-winged aircraft, and/or gunshot in the distance (see Visitor Use and Experience dismissal). Since few other wildlife species are likely to be present during fall and winter operations, the potential to disturb wildlife at breeding or rearing sites (e.g. dens or nests) or other sensitive habitats would be greatly reduced. Infrequent mountain goat management operations occurring outside of the fall and winter seasons would follow migratory bird and other wildlife protection measures. Therefore, the acoustic environment is dismissed from further analysis. Aircraft operations and gunshot noise impacts on bighorn sheep and wilderness character are discussed in Chapter 3.

Air Quality

The park is designated as a Class I air quality area under the Clean Air Act of 1963 (42 U.S.C. 7401 et seq.) and receives the highest level of protection with only a small amount of additional air pollution allowed. The proposed actions include short-term, periodic use of aircraft and ground vehicles, which would result in temporary increases of vehicle exhaust, emissions, and fugitive dust localized in parts of the general project area. Aircraft and ground vehicles would be intensively used during the first one to five years (as few days as necessary during up to three 14-day periods/year), and then only occasionally (once per year, with the possibility of a small number of additional flights to continue to remove mountain goats into the future). Ground vehicles would be used to transport staff to trailheads and/or frontcountry staging/helispot areas, and may be used under one proposed alternative to move some mountain goats out of the park after being carried by helicopter out of the backcountry. The slight temporary increases in exhaust, emissions, and dust would not affect air quality in the long term or the park's Class I air quality designation.

Archeological Resources

The park is known to contain a variety of archeological resources. To protect these resources, all of the action alternatives would avoid known archeological sites. Appropriate steps, such as halting work, employing archeological monitors, and notifying the park's Cultural Resources Branch staff immediately upon discovery, would be taken to protect any archeological resources that are inadvertently discovered during activities related to implementation. Helicopter landings in the backcountry, if needed, would occur on top of existing snow pack, which would avoid disturbing archaeological resources through downdraft and low frequency vibration absorption within the snow layer. Any helicopter landings in areas without proper snowpack may require archeological monitors to be present. All backcountry landing site coordinates would be reported to the park's Cultural Resource Branch for record keeping purposes. Staging areas/helispots in the frontcountry are located in previously disturbed areas.

Environmental Justice

Executive Order 12898, *General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. Given the analysis in this EA, it was determined that none of the alternatives would have disproportionate health or environmental effects on minorities or low-income populations or

communities, as defined in Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses (EPA 1998).

Ethnographic Resources

NPS Director's Order 28: *Cultural Resource Management* defines ethnographic resources as "any site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it." Any known sacred sites, as defined in Department of the Interior Environmental Compliance Memorandum 97-2, would be avoided (DOI 1997).

It is known that American Indian people utilized the area over thousands of years for hunting and gathering subsistence and occupation. The park holds many resources important to these tribes including minerals, wildlife, plants, and water. These resources do not always have a defined boundary and may occur in and adjacent to the project area.

Twenty-four tribes traditionally, and currently, value Jackson Hole for hunting, gathering, ceremonial, and other practices (see Chapter 4: Consultation and Coordination for a list of traditionally associated tribes and consultation information). During the planning process for this EA, the park contacted these tribes and consulted with them about potential concerns associated with ethnographic resources. They did not have any particular concerns with removing exotic mountain goats from the park or with the management activities needed to remove these animals. If tribes subsequently identify the presence of ethnographic resources, appropriate mitigation measures would be undertaken in consultation with the tribes. Any known sacred sites would be avoided during management activities. The locations of ethnographic sites would not be made public. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered, provisions outlined in the Native American Graves Protection and Repatriation Act of 1990 (25 USCUSC 3001) will be followed.

Federally Listed Wildlife Species

Four federally listed or proposed wildlife species and one critical habitat occur or have potential to occur within the project area (Table 2). The yellow-billed cuckoo, western glacier stonefly, and designated critical habitat for Canada lynx would not be impacted as a result of implementing any of the alternatives. Yellow-billed cuckoos are migratory and generally are only present in northwest Wyoming during the summer months. They nest in low elevation riparian woodland forests which do not occur in the action area. The glacier stonefly occurs in several melt water streams within the action area. However, during the winter (when most activities would take place) these locations are covered in snow and would not be impacted. Monitoring or other activities that take place in the summer are not expected to occur near sites where glacier stoneflies reside. Although a small amount of designated critical habitat for lynx occurs within the action area, no activities that would change the amount or condition of lynx habitat are proposed.

Table 2. Endangered, threatened, and proposed wildlife species of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway, 2018.

Common Name (Scientific Name)	Status
Canada lynx *(Lynx canadensis)*	Threatened
Canada lynx critical habitat	Designated
Grizzly bear (*Ursus arctos*)	Threatened
North American wolverine (*Gulo gulo*)	Proposed Threatened
Yellow-billed cuckoo (*Coccyzus americanus*)	Threatened
Western glacier stonefly (*Zapada glacier*)	Proposed Threatened

Two species, Canada lynx and wolverine, could be present within or near the proposed project area during the late fall and winter months (mid-December – early March) when intensive activities may take place. Grizzly bears could also be present and active in the project area in spring, summer, and fall. Although some grizzly bears may also be present in the project area in winter, they are typically inactive for about 5 months while in winter dens. A detailed Biological Assessment (BA) of Canada lynx, grizzly bears, and wolverine will be completed and submitted to USFWS prior to determining the selected action. The BA will contain more detailed information on potential impacts to these species and a final impact determination for each. In brief, monitoring and management activities proposed under the alternatives are not expected to have lasting or substantial effects on Canada lynx, grizzly bears, or wolverine, and some beneficial effects would occur.

Lynx are strongly tied to subalpine forests with abundant snowshoe hare, whereas mountain goats are generally associated with non-forested alpine or subalpine habitats near steep terrain. In addition, lynx are typically active at dawn and dusk, when monitoring and management activities would not occur. Given these differences in habitat preferences and use, the likelihood of temporal and spatial overlap between lynx and mountain goats is low; therefore, impacts on lynx are not anticipated. This in combination with a lack of recent confirmed lynx observations in the park and the surrounding area, despite intensive surveys, indicates lynx may currently be absent from the project area and therefore are unlikely to be impacted. Notwithstanding, aircraft could overfly habitat suitable for lynx, thus possibly disturbing any individuals or prey species that are present. Any disturbance is likely to be limited to the time the aircraft is passing overhead (<10 minutes), which could cause individual lynx or prey species to change their behavior or seek cover if the aircraft is perceived as a threat. It is likely that individuals will resume their prior or undisturbed behavior (if it was altered) once the aircraft is no longer in the vicinity.

All of GRTE, including the Teton Range, is considered occupied grizzly bear habitat, although most reported activity in the Teton Range occurs north of Moran Canyon. Suitable denning habitat for grizzly bears occurs throughout the Tetons (Podruzny et al. 2002). Overlap between high quality mountain goat habitat and grizzly bear denning habitat is limited, but these habitats are adjacent to each other in some locations. Grizzly bears are considered opportunistic omnivores whose diet varies widely and is influenced by annual and seasonal variation in available foods. The highest quality food available to grizzly bears in the GYE includes army cutworm moths, whitebark pine nuts, ungulates, and cutthroat trout. Under all alternatives (but more so under B and C), mountain goat carcasses would occur on the landscape and represent a potential food source and attractant to grizzly bears. However, because grizzly bears hibernate for 4-6 months each year and are likely to be in their dens when management activities occur, the risk of conflicts due to the presence of carcasses on the landscape can be adequately managed. The potential also exists to disturb grizzly bears either in or outside of their dens during flight operations. Denning grizzly bears appear to be most sensitive to disturbance early in the denning season (Linnell et al. 2000). In the GYE, 90% of female and male grizzly bears were denned by the fourth week of November and the second week of December, respectively (Haroldson et al. 2002). Given the proposed timing of intensive aircraft based management activities (when most bears have been denned for several weeks to a month), disturbance to grizzly bears is expected to be minimal. In addition, conservation measures to limit highly disturbing activities near known, occupied dens would further reduce the potential for impacts. Similarly, management actions that would result in mountain goat carcasses on the landscape would occur while bears are denned and there would be several month when bears are inactive for carcasses to be consumed by other scavengers or predators. However, carcasses could become buried in snow and become available again in the spring once bears emerge. NPS personnel would monitor the status of carcasses and either remove those in potential conflict areas or implement an area closure until the carcass if fully consumed or decomposed and no longer is an attractant.

As a species tied to high elevation remote areas, wolverine may occupy the same areas as mountain goats. Monitoring and management flight operations in areas where wolverine are present could cause

disturbance. In areas where project-related activities are relatively high and continuous over the course of several days, wolverine may alter their normal behaviors (e.g., feeding, traveling, etc.) or be displaced from those habitats. However, such disturbance would be temporary (i.e., limited to the time aircraft and associated human activities are occurring – several minutes to several hours) and wolverines would be expected to return to these areas once those activities have ended. Wolverine may be especially sensitive to disturbance during the denning period in later winter, consequently conservation measures would be implemented to prevent activities near den sites that could result in females relocating their litters or abandoning dens due to project-related disturbances. In addition, the expected timing of intense aircraft-based activities (mid-December–early March) would not overlap with the majority of the denning period. All alternatives could have beneficial impacts on wolverines due to the presence of carcasses (from a pneumonia die-off, should one occur, or from lethal removal actions) to feed on in the project area. These benefits would be short-term and limited to the time that carcasses are available on the landscape (1−2 weeks or longer if cached).

With conservation measures in place, disturbance under the alternatives could temporarily affect individuals, but would not negatively impact the grizzly bear, wolverine, or lynx populations as a whole.

Historic Structures and Cultural Landscapes

The park currently contain 732 resources that are listed, or eligible for listing, in the National Register of Historic Places. Individual resources may be historic sites, buildings, structures, or objects. These resources are found in 44 locations, where there may be one or multiple resources with the same context and historical significance in what is commonly called a historic district. Some of these historic districts, such as Colter Bay Village, Kimmel Cabins/Lupine Meadows, and Snake River Land Company Office and Residence, are located near the frontcountry staging areas/helispots that would be used for processing captured mountain goats, and for transferring mountain goats to recipients for translocation via live removal from the park. In backcountry areas, there are six historic patrol cabins (Cascade Canyon, Death Canyon, Granite Canyon, Leigh Lake, Lower Berry Creek Patrol Cabins, and White Grass Ranger Station) and the Valley Trail System, which includes the Teton Crest Trail, and nearly all the trails accessing the canyons of the Teton Range. Moose-Wilson Road is located at the base of the Teton Range west of the Snake River and south of Moose. The majority of this road is closed in winter as the road section from Granite Canyon Trailhead to Death Canyon Trailhead is gated, closed to motor vehicles, and unplowed. Other historic properties occur near the foothills of the Teton Range, including the White Grass Dude Ranch, which is operated by the Western Center for Historic Preservation during the summer months.

Field activities associated with management of mountain goats would not change the character or use of any cultural resources within or adjacent to the project area. Vehicular use of historic roadways and parking areas, and ground crews on hiking trails are activities commensurate with the intended and designed purpose of these structures. The footprint of helicopter landing zones (including disturbance from downdraft and low frequency vibration) and ground crew activity would occur outside of developed areas and not within close proximity to historic buildings and would thus avoid disturbing historic structures.

According to the NPS Director's Order-28: *Cultural Resource Management Guideline*, a cultural landscape is a reflection of human adaptation and use of natural resources, and is often expressed in the way the land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. Although noise from helicopters, and gunshots would occur during monitoring and management operations, the sounds would be distant and audible for a period of up to 8 hours per day over a maximum of 35 days (Alternative B) and 50 days (Alternative C) annually. The number of aerial operations would substantially decrease after one to five years as the mountain goat

population is reduced. No impacts to historic structures would occur, and no permanent or long-term impacts to cultural landscapes would occur.

Indian Trust Resources

The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. The park's lands and resources related to this project are not held in trust by the Secretary of the Interior for the benefit of Native Americans.

State Listed Species of Greatest Conservation Need

The State of Wyoming has identified five Species of Greatest Conservation Need (SGCN) with a native species status of 1 or 2 (highest need for conservation) that may be present within the proposed project area including: Common loon (*Gavia immer*), trumpeter swan (*Cygnus buccinator*), Canada lynx (*Lynx canadensis*), American pika (*Ochotona princeps*), and western toad (*Anaxyrus boreas*). The Canada lynx is also a federally listed species and is addressed in the Federally Listed Wildlife Species section above. The loon, trumpeter swan, and western toad are dismissed from further analysis as the project area is outside the elevational range of these species or the species is not expected to occur during the season of impact.

American pikas are small mammals that reside in the alpine zone of the Teton Range where mountain goats also occur. During the snow-free months, pikas actively forage in meadows adjacent to talus slopes. Although they do not hibernate and are active in the winter, they remain in their dens that are covered by snow. Consequently, pika would not be disturbed by actions proposed during the winter months. During the snow-free months, pika may occur near camera monitoring sites or at other locations where mountain goat management activities occur. Recent research (Stafl and O'Connor 2015) suggests that pikas respond to hiker disturbance by exhibiting anti-predator behaviors (e.g., alert response and reduced foraging time). Although individuals near trails showed tolerance for human activity, they still exhibited an anti-predator response. This study also found that temperature was the most important predictor of pika foraging behavior. In the summer, pika are highly sensitive to temperatures >25°C (77°F) and may restrict their activities to the cooler talus environment and limit their foraging activities. Any negative disturbance effects from deploying and checking cameras for monitoring purposes or from management actions in habitats also used by pikas may be minimized by the timing of those activities. Camera deployments and checks frequently occur around midday as these are typically day trips. Consequently, disturbance to pikas may be reduced if they are already restricting their foraging activities due to higher temperatures. However, activities occurring during cooler periods when pika may be active, could temporarily disturb individual pikas for the time those activities occur (~15 minutes to 1 hour), but they are not anticipated to affect the population as a whole. Summer activities, including those related to monitoring and mountain goat management, are expected to be intermittent and of short duration (i.e., few minutes to a few hours).

Visitor and Employee Health and Safety

The potential for impacts to the health and safety of the public and park employees during proposed management actions (e.g., helicopter use and landings in mountainous terrain, and firearms use to lethally remove mountain goats) would be mitigated through strict adherence to established NPS safety protocols. Temporary area closures would occur to ensure that visitors would not risk injury by inadvertently walking into areas where planned management actions are occurring. In addition, if individual mountain goats behave aggressively toward humans, the context of the encounter would be analyzed immediately, and the animal promptly and humanely dispatched, if appropriate.

Visitor Use and Experience

The wilderness and backcountry areas of the Teton Range where mountain goats are present offer a wide range of visitor uses and experiences throughout the year. Visitor activities that frequently occur during the summer and spring/fall shoulder seasons include day hiking, backpacking, mountain climbing, and backcountry camping. Popular activities during the winter and spring months include backcountry skiing and snowshoeing. Throughout the year, visitors enjoy the park's spectacular scenery and diverse native wildlife.

Primary access points into the wilderness and backcountry areas of the park's Teton Range are the Death Canyon, Taggart Lake, Lupine Meadows, Jenny Lake, and String Lake trailheads. Based on counter data obtained at these trailheads, about 281,000 recreational visits occurred in the park's Teton Range in 2016 (Newton 2017a).

Backcountry camping is a popular recreational activity, especially in the high elevation canyons and lakes of the Teton Range. In 2016, there was a total of 36,206 backcountry user nights (NPS 2017). This number represents all backcountry areas in the park, including areas within the Teton Range where the majority of backcountry camping occurs.

Guided climbing in the Teton Range comprises the vast majority of guided visitation in the Grand Teton wilderness. Guided climbing in the Teton Range occurs as day trips, overnight trips, and climbing schools. In 2016, 6,644 visitors participated in guided climbs in the Teton Range. The most popular peaks that are ascended in the Teton Range are Grand Teton, Middle Teton, Disappointment Peak, and Storm Point. The most popular month for climbing the peaks in the Teton Range is August (Newton 2017b). Other guided activities include backcountry skiing where a total of 1,093 visitors were guided during the winter of 2016-2017 (Canetta, 2017).

Fixed-winged and helicopter operations would temporarily affect visitors due to the visual presence and acoustic intensity of aircraft operating in the Teton Range where mountain goats are present (see Acoustic Environment dismissal above). Under all alternatives there would likely be temporary area closures during management activities. The total number of closures would vary annually and by alternative and largely depend on environmental conditions that affect duration of the operations, level of visitor use, and locations of mountain goats.

The majority of aircraft operations and temporary closures would occur in the fall and winter months (October through April) when backcountry visitation is ≤1 percent of total annual backcountry visitation (NPS 2017).The temporary effects of aircraft operations and temporary closures would likely diminish individual visitor use and experience within the backcountry and wilderness areas of the Teton Range. These effects are anticipated to lessen as mountain goats are removed from the park over the first one to five years. To mitigate these affects, park staff would provide advance notifications of scheduled aerial and ground field activities and temporary closures. These notifications would provide an opportunity for visitors to seek alternative arrangements. Therefore, visitor use and experience is dismissed from further analysis. Visitor experience as it specifically relates to wilderness solitude or primitive and unconfined recreation is retained as an impact topic under wilderness character (see chapter 3).

Wildlife including Migratory Birds (Excluding Bighorn Sheep)

There are 60 species of mammals, over 300 species of birds, and several species of reptiles, amphibians, and other vertebrates that reside within the park, some of which may occur in the action area (in the alpine

and subalpine environments where mountain goats live as well as near frontcountry staging areas). Those that could potentially occur in the project area during the winter months when intensive monitoring or removal actions would occur include several species that may scavenge on mountain goat carcasses including mountain lion (*Puma concolor*), coyote (*Canis latrans*), red fox (*Vuples vulpes*), Pacific marten (*Martes caurina*), gray wolf (*Canis lupus*), and common raven (*Corvus corax*). Given that mountain goats occur at high elevation where snow is deep, conditions are harsh, and food resources are limited during the winter, it is likely that if any of these species are present, they would occur at very low density. Grizzly and black bears typical hibernate from late fall through early spring and are unlikely to occur in habitats used by mountain goats in mid-winter. Similarly, most bird species, including those sensitive to disturbance such as golden (*Aquila chrysaetos*) and bald eagles (*Haliaeetus leucocephalus*) and peregrine falcons (*Falco peregrinus*) migrate out of northwest Wyoming or to lower elevations and are unlikely to be present at higher elevation in mid-winter. Amphibians and reptiles are also typically inactive during the winter months at high elevation.

Helicopter activities may cause short-term disturbances (for the time the helicopter is in the vicinity – generally several minutes to an hour) to any wildlife present. Because few species are likely to be present during winter operations and given implementation of conservation measures, the potential to disturb wildlife at breeding or rearing sites (e.g. dens or nests) or other sensitive habitats would be reduced significantly. No substantial impacts to wildlife, including migratory birds or their behavior is anticipated. Any disturbance impacts are likely to be temporary and short-term (described above) and are not expected to affect these species at the population level. Potential impacts are not expected to measurably increase impacts to migratory birds or other wildlife, consequently this topic is dismissed from detailed analysis.

CHAPTER 2: Alternatives

Alternative A – No Action

Under the no-action alternative, current actions to manage nuisance mountain goats and monitor the population would continue, but no active population management of exotic mountain goats would occur within the park, except if needed to address a human safety concern. Such management of nuisance mountain goats would include hazing or removal of individual goats, public education, and/or area closures. Ongoing monitoring efforts to document the distribution and abundance of mountain goats would continue, as funding allows. Aircraft based operations would occur ≤20 days; including ≤12 days of fixed-wing monitoring (approx. 1 flight/month), ≤3 helicopter survey days, and ≤5 helicopter-based capture days (Table 2).

Refer to Elements Common to All Alternatives and Table 2 for additional information on humane management actions, helicopter/firearms use requirements, monitoring, live capture, lethal removal of nuisance animals, and other actions.

Alternative B – Lethal Removal Only

Alternative B would manage exotic mountain goats using lethal actions to remove goats from the park. The alternative would also include the range of actions common to all alternatives and common to the action alternatives. It is likely that few mountain goats would be captured, sampled, and radio-collared for monitoring purposes since emphasis would be on population reduction. However, there still may be a need to capture, collar, and release a limited number of animals to facilitate monitoring and aid in finding goats for management activities.

Aerial-based lethal removal would be performed by federal personnel or contractors with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Mountain goats would be killed using firearms with non-lead ammunition from fixed-wing aircraft, helicopter, or the ground. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats would be captured and euthanized. Aerial capture techniques would include darting or net-gunning from a helicopter. Ground capture techniques would include ground darting or baiting goats to a drop net, clover trap, or snare. Aerially-captured mountain goats would be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they would be humanely dispatched. Those captured using ground techniques would be dispatched on site. Animals would be dispatched (i.e., using euthanasia drugs or by gunshot) by trained personnel following established and approved guidelines from the American Veterinary Medical Association (AVMA 2013). The actions described above would take place in the Teton Range backcountry, most of which is recommended wilderness.

Mountain goat carcasses would generally be left on the landscape for the benefit and use of scavengers and/or to decompose naturally. When possible, carcasses would be kept away from popular visitor-use areas such as trails and campsites. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears. Assuming that 90% of the estimated 2018 population of 100 mountain goats could be removed over the course of the population reduction, approximately 90 mountain goat carcasses could be left on the landscape.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities would occur in ≤3 removal periods/year between mid-December and early March. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period would last ≤2 weeks. Aircraft-based operations would occur ≤25 days, which would include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period (Table 2). If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals would take place where mountain goats occur within the park, but would generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population or 10−12 goats would likely remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters would also be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year would occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

It took roughly 40 years from their introduction in Idaho for mountain goats to establish a breeding population in the park. If lethal management is effective, it could be 5−30 years before goats disperse to the Teton Range again. The actual time frame would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

Refer to Elements Common to All Alternatives, Elements Common to the Action Alternatives (B and C), and Table 2 for additional information on humane management actions, helicopter/firearms use requirements, monitoring, live capture, lethal removal, management framework, and other actions.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Under Alternative C, mountain goats could be captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS would work closely with appropriate state wildlife and federal land management agencies or other approved recipients (including zoo personnel) to plan and execute the translocations. Recipients would generally be responsible for transport and associated costs to move mountain goats from frontcountry staging areas within the Grand Teton to release sites outside of the park. Mountain goats could be captured over the course of up to 3 to 5 years, with most activity in years 1 and 2. Capture operations would occur between December and March. Captured mountain goats would be transported by helicopter to frontcountry staging areas, where they would be transferred to approved recipients. Capture and translocation under Alternative C is projected to involve approximately 25% of the 100 mountain goats. However, the number of mountain goats captured and translocated could be more or less, depending on capture success and the interest from outside entities to receive mountain goats and their ability to cover transport, disease testing, and associated expenses.

When translocation and lethal removal activities occur in the same management period, live capture and translocation activities would generally occur prior to lethal removal. This order of actions is desirable because capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and a significant portion of the population is in terrain where capture can be achieved safely. As the removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. Once capture efficiency and opportunities for safe capture decline, the operation would transition to lethal removal techniques. However, if/when appropriate the park may conduct lethal removal actions before translocations as dictated by conditions.

Mountain goats would be captured and then transferred to the interested recipient. Capture operations would occur wherever goats are located within the park, but would likely take place between Cascade and Snowshoe canyons (Fig. 1), which are within recommended wilderness. Goats would be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats would be ferried beneath the helicopter in a transport bag to a staging area. NPS personnel would coordinate with WGFD personnel and others to facilitate the transfer of mountain goats to recipients. Recipients would be responsible for acquiring transport or other permits as necessary. No more than four goats would be transported via helicopter during a single trip. The maximum ferry time would be approximately 45 minutes. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it would be dispatched as quickly as possible using approved techniques (AVMA 2013). Translocation activities would initially require ≤10 helicopter flight operation days annually to transport goats to frontcountry staging areas (Table 2). The number of flights would decrease as the mountain goat population is reduced. After reaching the staging areas, mountain goats would be transported by recipients using road-based vehicles to translocation sites outside of the park. Ground transport would likely take ≤2 days to reach the translocation sites. Translocations would occur primarily from mid-Decmber through early March, but could occur at other times of the year as necessary. The number of park staff and other individuals taking part in translocation activities would vary between approximately 5−10 people.

Helicopter capture efficiency would be greatest at the start of live capture operations, when mountain goats are naïve and occur in areas with safe access. As capture operations progress, the goats are likely to shift their distribution to areas of rougher terrain where safe capture is difficult. If capture efficiency exceeds typical effort for capturing goats (2014−2016 = 2.5 hours/goat), helicopter-supported translocation operations would cease, and shift to lethal removal techniques as described under Alternative B (Table 2).

Refer to Elements Common to All Alternatives, Elements Common to the Action Alternatives (B and C), and Table 2 for additional information on humane management actions, helicopter/firearms use requirements, monitoring, live capture, lethal removal, management framework, and other actions.

Elements Common to All Alternatives

1. **Humane Management Actions**: In accordance with standard operating procedures, NPS *Management Policies 2006* (4.2.3; NPS 2006), the Animal Welfare Act, and guidance from the American Society of Mammologists (Sikes and Gannon 2016), all actions involving direct handling or management of goats would be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained.

2. **Designated Frontcountry Helispots and Staging areas:** Frontcountry helispots and staging areas would be required for mobilization of staff and equipment during management activities. When accessible, helicopter landing and/or refueling sites would be used (Figure 1). All helispots and staging areas are located within frontcountry developed areas and are intermittently used for search and rescue and other park administrative aerial- and ground-based operations.

3. **Helicopter/Firearms Use Requirements:** Helicopter and firearms use would comply with the NPS firearms use policies, Interagency Helicopter Operations Guide (IAMC 2006), and the NPS Aerial Capture Eradication and Tagging of Animals (ACETA) Operations Plan (2017). Per NPS aviation policy, only qualified government or contract personnel would participate in aerially-based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations would be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations would base out of the Jackson Hole Airport. Firearms would be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and, under the action alternatives, to lethally remove mountain goats in the park.

4. **Monitoring**: Monitoring activities would include temporary capture (helicopter based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats would provide a more complete assessment of mountain goat survival, productivity, distribution, as well as possible competitive interactions with, and influences on, bighorn sheep.

   Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys would occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards the natural or artificial mineral lick. Remote cameras would be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys would be completed over 1−3 days per year, with 6−8 hours of flight time each day (Table 2). During the aerial survey, a low-level helicopter would systematically search all mountain goat habitat in the park.

   For monitoring purposes mountain goats would be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following established and approved capture and handling protocols. Upon capture, the helicopter would land close by and the mountain goat(s) would be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing mountain goats would be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam would be conducted to check for signs of respiratory distress or capture-related injuries and baseline heart rate, respiratory rate, and rectal temperature would be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites would be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs would be collected from goats transported to frontcountry sites to assess disease, micronutrient, or genetic status. These goats would then be radio-collared and returned to the capture location for release.

   The number of days needed for captures would depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that

timeframe. Given favorable weather conditions, approximately 10 goats could be captured in a five-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes would likely take place in a 5−7 day window during the late fall and winter months (mid-December – early March) when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS would continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) would occur at established frontcountry staging/refueling sites. No vegetation clearing is proposed at landing sites. A contract helicopter would base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations would base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park (BTNF and GRTE 2017; Figure 1) and could be used for processing/sampling captured mountain goats and refueling the helicopter. Capture with transport would involve two backcountry landings per animal–one to pick the animal up and one to return it to its capture location.

5. **Carcass disposal:** Carcasses resulting from aerial- and ground-based removal activities would generally be left in place to provide biological and ecological benefits. They would be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses would be moved by ground personnel, who would drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses would be relocated or removed by the eradication crew using a helicopter. Transportation of carcasses would be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcasses cannot be moved, but may pose a risk to park visitors, temporary area closures would be implemented (see Temporary Closures below).

6. **Temporary Closures:** It is possible that specific areas of the park would need to be temporarily closed during mountain goat management activities if park staff would determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures would occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved, but may pose a risk to park visitors, temporary area closures would be implemented. These closures (≤ 5 acres) would remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public would be appropriately notified in advance of these temporary closures.

7. **Artificial Baits**: Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal. Locations would be chosen to minimize effects to the environment.

8. **Education/Interpretation**: The NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources. The NPS would continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

9. **Work Cooperatively with Non-NPS Land and Wildlife Managers**: The NPS would work cooperatively with WGFD, Idaho Department of Fish and Game (IDFG), the United States Forest

Service (USFS) (Bridger–Teton and Caribou–Targhee national forests, BTNF and CTNF respectively) and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

10. **Wilderness Character Monitoring:** NPS wildlife biologists would report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the *Grand Teton Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship* (NPS 2015a). Measures reported would include authorized actions that manipulate wildlife, status of nonnative animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

Elements Common to the Action Alternatives (B and C)

1. Management of mountain goats would be guided by the following framework:

   Population Reduction (Years 1-5). The goal would be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts would ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction efforts via helicopter-based efforts would generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

   Post-reduction (Years 6-7). This would occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts would transition from intensive to tactical monitoring and removal. Tactical monitoring and removal efforts would occur year round.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal would be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring would continue and it may be necessary to employ several monitoring methods simultaneously in combination. Removal efforts would likely be ground-based and tactical.

2. **Education/Interpretation:** In addition to the educational and interpretive information provided to the public under all alternatives the NPS would provide additional information on the progress towards achieving the desired conditions. The NPS would also continue to request visitors to report observations of mountain goats and bighorn sheep.

3. **Lethal Removal:** Both alternatives would involve the use of firearms to lethally remove mountain goats from the park. The type of firearms used would typically be shotguns for helicopter-based removals and rifles for ground-based actions.

Given the steep, inaccessible terrain where mountain goats reside it is likely that a significant portion of the removal work would involve aviation operations, although some work may occur from the ground. Ground-based removals may be necessary to complete removal of mountain goats, and these efforts could include federal staff (i.e., NPS staff, Wildlife Services staff, or other approved and qualified government employees).

Conservation Measures to Reduce or Avoid Potential Impacts

The following conservation measures are applicable to all alternatives:

Acoustic Environment

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

Cultural Resources

All staff and other persons involved in mountain goat management would be informed of the procedures to follow in the event of archaeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.

If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (≤600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park archaeologist (307-739-3671) will be contact for any questions or discoveries. The same measures would be followed for paleontological (fossils) and other non-cultural related resources.

In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archaeologists would be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.

Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the Cultural Resources Program Manager (307-739-3671) for record keeping purposes and to pursue archaeological surveys of the areas, as warranted, post-project.

- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
  Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.

Soils

- Field activities would minimize disturbances on steep slopes and bare mineral soil.

Vegetation

- Location information on backcountry work areas (e.g. bait and capture sites) would be recorded and maintained as part of the record of actions taken; this would ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas would be minimal in size and short-term in nature to reduce vegetation impacts of staging.
- Equipment and boots would be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of nonnative species.

Visitor Use and Experience

- As much as possible, field activities in backcountry and wilderness areas would occur during periods of minimal visitation, and would avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications would be issued to inform visitors of temporary area closures and other management activities.

Wilderness Character

- **Undeveloped:** Bait lures, traps, cameras and other installations would be removed at the end of each field season. Located animal collars that no longer serve as tracking devices would be retrieved when practicable.
- **Solitude or primitive and unconfined recreation:** Aerial and ground-based field activities in wilderness areas would occur during periods of minimal visitation and would avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff would examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors (see Visitor Use and Experience above).
- **Other features of value:** Field activities would avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources. If previously unknown archeological and/or paleontological resources and/or human remains are discovered during field activities, all work in the immediate vicinity of the discovery shall be halted until the resources are identified and documented, and an appropriate mitigation strategy is developed by park cultural resources staff (see Cultural Resources above).

Wildlife

- To prevent environmental contamination, only lead-free ammunition would be used.
- Helicopter pursuits for the purpose of live capture would occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses would be recorded and passed on to park staff at the end of each day. Based on this information, appropriate trail or area closures would be identified and implemented, as necessary, or carcasses would be moved/removed to minimize the potential for conflicts.

- The decomposition status of mountain goat carcasses would be monitored throughout the season and appropriate measures (e.g. removal, demolition, area closure, etc.) would be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Helicopter based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter based removal of mountain goats would be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer would be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer would be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities would be briefed on identification of wolverines, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine is observed, pilots would be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine denning habitat during the sensitive denning period (after mid-February), a denning survey would be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer would be established around the den.
- A disturbance free buffer of 1 km around known, occupied grizzly bear dens would be implemented to minimize disturbance to denning grizzly bears.
- All activities would comply with the parks' Superintendent's Compendium (2018 and as updated) regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) would ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office (307-739-3673) will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.

- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately (307-739-3301). All bear sightings must be reported to the park's Bear Management Office (307-739-3673) in ≤24 hours.

Table 3. Summary of Actions in the Alternatives

Action	Element	Purpose	Operational Window	Target[1]	Duration (days)	Frequency	Alt. A	Alt. B	Alt. C
Monitoring	Telemetry/observation fixed-wing flights	Monitor distribution, movement, demographics, and abundance, and support live-capture operations	Year-round	None	Monitoring/capture support: ≤12 flight days total; support for translocations (Alt C only): ≤5	As needed to support capture or monitoring efforts	X	X	X
	Camera traps	Population estimate	Year-round	None	Year-round in some locations; May−Oct. in others	Annually	X	X	X
	Helicopter survey	Population estimate	Dec−Mar	None	1−3 flight days	Annually with bighorn sheep survey	X	X	X
	Ground surveys	Population estimate	May−Oct	None	≤2 weeks	Annually	X	X	X
Live capture	Capture, radio collar, and release	Aid monitoring/disease testing	Dec−Mar	5−10 goats	2−5 days	As needed to facilitate management and monitoring and as funding allows	X	X	X
	Translocation	Population reduction	Dec−Mar or at other times of year as necessary	≤25% of existing population (≤25 goats)	5−10 days	Consider annually during population reduction when interest warrants and funding allows			X
Lethal Removal	Nuisance individuals	Reduce safety threat	Year-round	Targeted individual(s)	≤1 flight day/individual	As needed	X	X	X
	Aerial removal	Population reduction	Dec−Mar or other times of year as necessary	Alt A = 0; Alt. B ≈ 90% Alt. C ≈ 75%	Alt B and C: ≤5 flight days per management period, but weather dependent	Annually during population reduction		X	X
	Live capture and euthanize/ dispatch	Population reduction	Year-round	TBD	TBD	As needed		X	X

Action	Element	Purpose	Operational Window	Target[1]	Duration (days)	Frequency	Alt. A	Alt. B	Alt. C
Lethal Removal	Ground removal	Population reduction	Year-round	Alt A. = 0; Alt. B ≤ 20% over duration of plan; Alt. C ≤ 10% over duration of plan	Up to several days per goat	Consider annually during population reduction; as needed in perpetuity at low levels		X	X
Other Actions	Hazing	Reduce safety threat	Year-round	Targeted individual(s)	Several hours to several days	As needed in perpetuity	X	X	X
	Information/ Education/ Outreach	Reduce safety threat from rogue goat; inform public about mountain goat plan/management actions	Year-round	Affected publics	Duration of project	As needed but likely limited	X	X	X
	Area closures	Carcass management; reduce safety threat from rogue goats; human safety near active staging and management areas	Year-round	None	During lethal and non-lethal removal activities	As needed	X	X	X

[1]Target is defined as desired outcome.

Alternatives Considered but Dismissed

Removal of Mountain Goats by Public Hunting. Title 36 Section 2.2 (b) (1) of the Code of Federal Regulations (36 CFR 2.2 (b) (1)) states hunting shall be allowed in park areas where such activity is specifically mandated by Federal statutory law. While the 1950 enabling legislation for Grand Teton National Park allows for the controlled reduction of elk when necessary for proper management of the herd, with the assistance of qualified and experienced hunters deputized by the National Park Service, public hunting is not authorized in Grand Teton National Park's enabling laws. This alternative was dismissed because it would require a major change to Grand Teton National Park's enabling legislation.

Use of Skilled Volunteers to Assist with Ground-Based Lethal Removal of Mountain Goats. The rapid reduction of the park's mountain goat population is vital for the continued existence of the Teton Range bighorn sheep population. The mountain goat population is currently at a size where complete removal or a substantial reduction (as described in this plan) is achievable in a short time frame. However, if no action is taken, the apparent growth rate of this population suggests that mountain goat removal may become more challenging or possibly unattainable after three years. Additionally, the threats of competition and/or pathogen transmission from mountain goats could contribute to the rapid extirpation of the declining population of bighorn sheep.

Compared to the immediate need for the actions described in this plan, most animal removal programs in national parks involve managing native population numbers (e.g. elk and bison) or reducing large populations of nonnative animals over a longer period of time. The expected initial removal of approximately 90% of the mountain goats in the Teton Range within 1−5 years and the subsequent removal of a small number of goats that may remain or repopulate the area would be better achieved using skilled park staff and contractors. Because mountain goats are dispersed in backcountry areas, distant from road access, and seldom seen from park trails, there is little likelihood of successful expeditious control by volunteers on the ground. Thus, there would be little benefit in developing and managing a short-term ground-based skilled volunteer program to remove mountain goats. This alternative was dismissed because it is duplicative when compared to using skilled park staff and contractors to more effectively and efficiently remove the remaining mountain goats from the Teton Range.

Mountain Goat Removal Using Only Non-Lethal Methods. The capture and relocation of mountain goats may not be practical if there is not enough interest from agencies and organizations to accept the number of goats that need to be removed from the park. In addition, given the inaccessible and remote areas where mountain goats reside and low capture efficiency for mountain goats in the Tetons (i.e. large time investment to live capture a single individual) it would be very difficult and costly to safely achieve complete removal using only non-lethal means. An alternative has been retained (Alternative C) that proposes to use a combination of lethal and non-lethal methods to remove mountain goats. This alternative provides greater flexibility for the park to use non-lethal methods whenever possible. This alternative was dismissed because of its inability to resolve the purpose and need for taking action.

Fertility Control. Fertility control has been used in NPS units for population control of several ungulate species (Powers and Moresco 2015). The utility and appropriateness of this tool depends on the objectives for management. With the goal of eliminating exotic mountain goats and limiting adverse effects due to increasing numbers, fertility control could be a useful tool in helping achieve these objectives. Fertility control per se would not eliminate mountain goats from the park nor address possible pathogen transmission, competition, or vegetation concerns, but it could slow the growth rate and reduce the number of mountain goats that need to be removed. However, there is no fertility control agent currently approved for use in mountain goats and no effective delivery technique. Until the aforementioned

technical challenges are addressed, fertility control as a non-lethal technique in the toolbox (e.g., Alternative C) is not feasible. This alternative was dismissed because of its technical infeasibility and its inability to resolve the purpose and need for taking action.

Use of Only Non-Mechanized Transport to Manage Mountain Goats (Wilderness Minimum Requirement). Three options that do not use mechanized transport and temporary installations have been analyzed in the mountain goat management plan wilderness minimum requirement analysis (MRA; NPS 2017) for all alternatives carried forward in this EA. Luring and capturing mountain goats using non-mechanized transport and without the aid of temporary installations (e.g., lures and traps) would not be practicable for the following reasons: 1) Locating and capturing mountain goats on foot within the wilderness would require special expertise in high-elevation technical climbing over extreme terrain and in rapidly changing weather conditions. This would result in an unacceptable safety and health risk to individuals conducting field activities. 2) Ground-based monitoring and lethal removals would not be enough to meet the purpose and need of the EA, as the likelihood of successfully monitoring and removing mountain goats expeditiously would be difficult and improbable to achieve. This alternative was dismissed because of its technical infeasibility and its inability to resolve the purpose and need for taking action.

CHAPTER 3: Affected Environment and Environmental Consequences

This chapter describes the affected environment (existing setting or baseline conditions) and analyzes the potential environmental consequences (direct, indirect, and cumulative impacts) that would occur as a result of implementing the proposed alternatives.

Bighorn Sheep

Affected Environment

Rocky Mountain bighorn sheep are native to parts of Wyoming including the Teton Range in the northwest corner of the state. Historical records from fur trappers and explorers confirm the presence of bighorn sheep in this area. However, no reliable estimates exist for the size of the population historically, but it is thought that the bighorn sheep were more widely distributed and more numerous throughout the Teton Range prior to settlement of the surrounding area (Whitfield 1983). Bighorn sheep numbers declined as pioneers settled the area and by the 1950s the Teton Range bighorn sheep no longer accessed low elevation winter habitats in canyons and valleys on the east and west slopes of the range. Although the specific cause of the decline is not known, it was likely due to a combination of factors including development of low elevation habitats on the flanks of the Teton Range and in the valley bottoms, fire suppression and loss of open habitats, and possibly disease due to large flocks of domestic sheep grazing the west slope of the Teton Range and portions of the park (Whitfield 1983).

Currently, the Teton Range bighorn sheep herd is comprised of two subpopulations that occur in the north and south-central portions of the range (Figure 5; Whitfield 1983, Whitfield and Keller 1984, NPS unpublished data, Courtemanch 2014). The sheep herd occupies much of the higher elevations of the Teton Range, using constricted high-elevation windblown areas during the winter and broader areas of varying elevation during the summer and fall (Whitfield 1984, Courtemanch 2014). In general, bighorn sheep select open areas with good visibility in close proximity to steep and rugged terrain and forage on a

variety of grasses, forbs, and shrubs (Laundré 1994, Shackleton 2013, Courtemanch 2014). Bighorn sheep have high fidelity to seasonal home ranges and are slow to colonize new or currently unoccupied but suitable habitat (Risenhoover et al. 1988). The herd's range lies primarily within the park and on the west slope of CTNF, but it also occupies a small portion of the BTNF on the east slope of the Teton Range. Management of the herd and its habitat is coordinated between NPS, WGFD, and the USFS. The bighorn sheep are considered a core native herd by the State of Wyoming (Wyoming State-wide Bighorn/Domestic Sheep Interaction Working Group 2004), which means they have never been extirpated and repopulated with transplanted bighorn sheep. The USFS and WGFD have special designations for bighorn sheep which the NPS respects. WGFD considers bighorn sheep as a Species of Greatest Conservation Need (WGFD 2017b), which means they warrant increased management attention and funding, as well as consideration in conservation, land use, and development planning. Bighorn sheep are considered a sensitive species on the BTNF and on the Targhee portion of the CTNF. Sensitive species are those for which population viability is a concern.

Winter helicopter surveys have been conducted periodically to assess population numbers and trends. During the three most recent winter surveys (2015−2017) a total of just 57, 46, and 48 bighorns were counted in the Teton Range (WGFD 2015, 2016, and 2017a). Comparatively, the previous helicopter surveys conducted in 2008 and 2010 yielded counts of 96 and 81 bighorns, respectively. Currently the herd is estimated at about 80 individuals (WGFD 2017a). Prior to 2015, population was thought to be approximately 100−125 individuals. The cause of this apparent population decline is unknown. Due in part to its small size, the Teton Range bighorn sheep herd exhibits low genetic diversity and is genetically isolated from neighboring herds (Kardos et al. 2010). The two population segments two segments at the north and south ends of the range do not appear to interbreed with one another (Kardos et al. 2010).

Winter range for the Teton Range herd is currently limited to small areas of windswept alpine tundra, rock, and snow-free krummholz (high-elevation treeline areas of stunted, wind-blown trees) on ridges and slopes generally ≥8,500 feet (Whitfield 1983, Reid and Cain 1996, NPS unpublished data, Courtemanch 2014). Wintering conditions in these areas are extreme due to high winds, low temperatures, deep snow, and little available forage. These high-elevation winter ranges also predispose these bighorn sheep to sources of mortality not usually associated with more typical, low-elevation winter areas. Mortality due to avalanches and falls from cliffs is high, and starvation may also be important during some years (Reid and Cain 1996, Courtemanch 2014, NPS and WGFD unpublished data 2017).

Biologists have long recognized the potential for human disturbance of crucial bighorn sheep wintering areas in the Teton Range. Recent research by Courtemanch (2014) has demonstrated that the Teton Range bighorn herd is adversely affected by winter backcountry recreation. GPS-collared animals avoided areas of suitable winter habitat that experienced backcountry recreation, and animals exposed to high levels of winter recreation exhibited increased daily movement rates compared to animals exposed to low or no winter recreation (Courtemanch 2014). For bighorns that live at high elevation where winter conditions are harsh and deep snow buries forage and adds energetic costs to movements, energy conservation is critical to survival. Consequently, increased movements in response to backcountry activity can cause bighorn sheep to burn calories that are needed simply to survive the winter, resulting in reduced survival or reproductive potential.

To protect some of the most important areas for wintering bighorn sheep, Static Peak and the Prospectors/Mt Hunt complex have been closed to human entry during winter to provide secure wintering habitat. Both areas were known bighorn sheep wintering areas and once popular ski mountaineering destinations. Based on location data from radio-collared bighorn sheep (NPS unpublished data), other important bighorn sheep wintering areas within the park were identified in the early 2000s. However, closures were not implemented then because winter recreation use levels were relatively low at the time and the closures were deemed unnecessary. Since then, winter backcountry use has increased and

recreationists regularly access bighorn sheep wintering areas in the south, and frequently in some areas at the north end of the range.

Bighorn sheep are highly susceptible to pathogens that have been introduced by domestic livestock (particularly domestic sheep) and, consequently, disease (particularly polymicrobial bacterial pneumonia) plays an important role in hindering conservation and restoration of the species in much of its range (Buechner 1960, Wehausen et al. 2012, Manlove et al. 2016, Cassirer et al. 2017). Although all domestic sheep allotments in the Teton Range are now closed (except for an area where sheep are trailed and loaded along Highway 22 west of Teton Pass), domestic sheep still graze in the Snake River Range in Idaho and Wyoming approximately seven miles south of the southern boundary of the park. The existing domestic sheep allotments overlap with mountain goat range and disease testing indicated that mountain goats from the Wyoming and Idaho populations in the Snake River Range are positive for all the pathogens associated with polymicrobial pneumonia. Limited testing of the Teton Range bighorn sheep herd has detected two pathogenic agents indicating the herd may be immunologically naïve (i.e., not previously exposed) to most pneumonia-causing pathogens. However, only 18 animals have been tested since modern disease tests have been available and the missing pathogens could have simply not been detected (Butler et al. 2017).

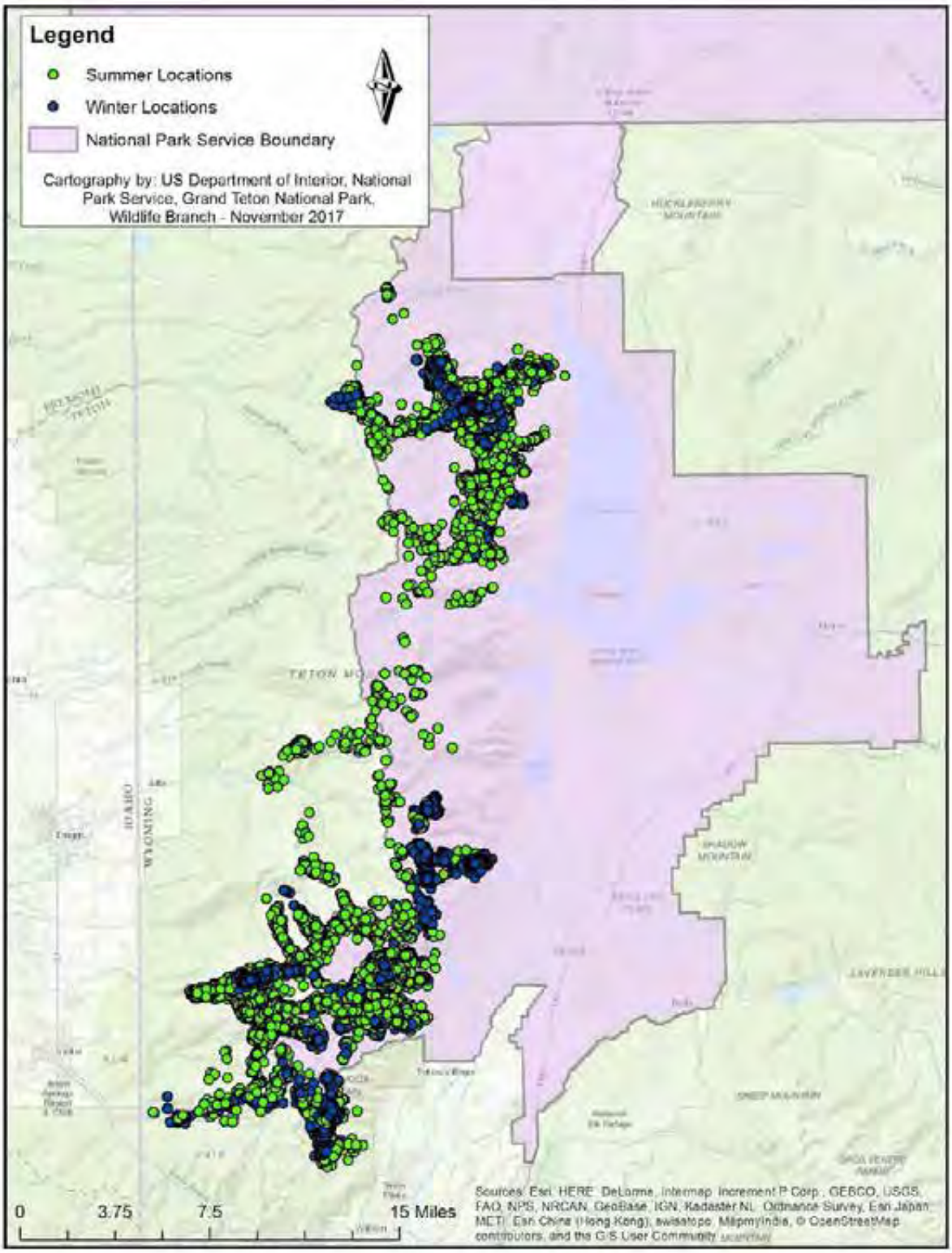

Figure 5. Global-positioning system locations of 28 adult female bighorn sheep that were captured and collared, Teton Mountain Range, Wyoming, 2008−2010. Green dots represent summer locations for all 28 individuals, while blue dots represent winter locations.

Environmental Consequences

Alternative A – No Action

Direct and Indirect Impacts

Under Alternative A, there would be no actions taken to actively reduce the number of mountain goats in the park. With no active management of mountain goats, it is expected that the population would continue to grow rapidly, with occasional population reductions resulting from disease outbreaks, weather conditions, density dependence, or other factors. Continued growth of the mountain goat population increases the likelihood that they will expand out of the current core use area in the central portion of the Teton Range and into areas at the north and south ends of the range that are currently used by and critical to the persistence of bighorn sheep. Given the severely limited extent of available winter range in the Teton Range, expansion of mountain goats onto these ranges would increase overlap between bighorns and mountain goats, and could result in displacement and/or competition adding to the stresses (e.g., energetic stresses, low genetic diversity, etc.) the bighorn sheep herd currently faces. In addition, as greater overlap with bighorn sheep occurs, the potential for transmission of pathogens between the two species is also expected to increase. Because the bighorn sheep population appears to be naïve to common pathogens found in neighboring bighorn sheep populations, an outbreak of pneumonia could be catastrophic for this herd. When a naïve herd of bighorn sheep is exposed to the pneumonia-causing pathogens, a pneumonia outbreak and subsequent die-off involving a significant portion of the herd often occurs. Often bighorn sheep herds see lingering effects (for several years) of a pneumonia outbreak on lamb survival that can prevent the herd from recovering (Cassier et al. 2013, Wood et al. 2017). Depending on the severity of an outbreak, the population could be severely reduced to a point where it is no longer viable or extirpated.

Indirect effects to bighorn sheep from the continued presence of mountain goats include degradation of habitat and impacts to the availability of forage. A recent habitat-modeling study in the GYE found that 75% of historic bighorn sheep observations in the ecosystem fell within areas predicted to be suitable mountain goat habitat (Devoe et al. 2015), supporting general notions that the two species occupy similar environments. Degradation of habitat and forage impacts could increase over time if the mountain goat population continues to grow and expand. DeVoe et al. (2015) estimated that the Teton Range could support a population of approximately 250−400 mountain goats, which is at least 2.5−4 times the current population size. The limited scope of actions proposed under Alternative A would not affect the projected population trajectory of mountain goats in the Teton Range. Thus, the negative impacts to bighorn sheep from the continued growth and expansion of the mountain goat population into new areas are expected to increase under Alternative A as the mountain goat population approaches carrying capacity. Where habitat use and diet between bighorn sheep and mountain goats overlap to a large degree, impacts from competition for habitat and food resources could be severe (Laundre 1990) as research suggests mountain goats may be socially dominant over bighorn sheep (Festa-Bianchet and Cote 2008). This could potentially further limit the habitat availability and quality for bighorn sheep in the Teton Range, which has already experienced dramatic limitations in habitat, especially in winter. Currently, there is limited overlap between mountain goats and bighorn sheep and competition is not likely occurring. However, as the mountain goat population continues to grow and expand into areas important to bighorn sheep in winter or summer, displacement or competition for resources may occur. In the long-term (5−10 years), if bighorn sheep are displaced from traditional seasonal ranges or shift away from areas used by mountain goats to areas of lower quality habitat, survival and reproduction could be negatively affected.

If individual mountain goats exhibited nuisance behavior that presented a threat to human safety, actions could be taken (e.g., hazing, removal, public education, or area closures) to address the issue. Individual

bighorn sheep in proximity to hazing or lethal removal actions could be temporarily (hours to <1 day) disturbed while these activities occur. The need for management actions to address nuisance mountain goat behavior is expected to be infrequent (to date there have been no human-mountain goat interactions that have warranted action) and actions associated with hazing or lethal removal are anticipated to be of short duration (hours to <1 day). Given the current separation between bighorn sheep and mountain goats and implementation of specific conservation measures for bighorn sheep, impacts to individual bighorn sheep are expected to be minimal and population-level impacts are not anticipated.

Actions to monitor mountain goats, including helicopter capture or surveying, could disturb individual bighorns present in the vicinity. In this context disturbance is defined as an activity that changes the regular behavior or routine on an animal (Government of Yukon 2006). The effects of aircraft operations on bighorn sheep can vary with intensity, duration, timing, predictability, proximity of operations to the animal, or location of the animal relative to escape terrain or secure habitat. Alternative A, would have the fewest number of days on which aircraft are used to perform monitoring or support management activities. Helicopter overflight or landing could interrupt normal activity patterns of bighorn sheep (i.e. resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, or stop eating or ruminating. Such impacts, if they occur, are expected to be short-term and limited to the time that helicopters are in the vicinity of bighorn sheep (hours to a few days). Currently, bighorn sheep and mountain goats occur in separate portions of the Teton Range, thus impacts from helicopter captures or surveys of mountain goats to individual bighorn sheep are expected to be minimal and population-level impacts are not anticipated. However, as the mountain goat population grows, distribution expands, and overlap between the goats and sheep increases, disturbance impacts from helicopter-based capture and monitoring activities could also increase, although any impacts are still expected to be temporary and limited to the time that aircraft are in the immediate vicinity of bighorn sheep.

Deploying and maintaining remote cameras at mineral licks would likely displace any individual bighorn sheep present in the vicinity at the time the site is visited. Initial camera deployment can take <1 hour, but subsequent visits usually require <15 minutes on site. Again, any bighorn sheep present would likely leave the area as they detect people approaching. Once humans are no longer present, bighorn sheep would likely resume their prior activities.

Cumulative Impacts

The geographic scope of cumulative impacts for bighorn sheep includes the areas of the Teton Range and adjacent Jackson Hole where the bighorn sheep herd historically occurred. The temporal scope is approximately 20 years, which is the estimated time it may take for mountain goats to fully occupy the Teton Range and reach carrying capacity. Past, present, and reasonably foreseeable future actions under Alternative A that have or could impact Teton Range bighorn sheep both within and outside the park include: trail maintenance, search and rescue operations, fire management activities (including long-term fire suppression), vegetation and exotic plan management, scientific or social science research and monitoring activities, year-round backcountry recreation, human development, ski area management, permitted helicopter skiing, public hunting (including bighorn sheep outside the park), current permitted domestic livestock grazing, past retirement of domestic sheep allotments, and overflights and airport activity.

As a result of past management actions and human activities, the size and geographic distribution of the Teton Range bighorn sheep herd has been reduced and the herd is now genetically isolated from neighboring herds. The amount of habitat available to Teton Range bighorn sheep has been reduced due to human disturbance and fire suppression. The bighorn sheep have lost access to their traditional low elevation winter ranges because of residential, agricultural, or commercial development in the valleys and

as a result of conifer encroachment and loss of seral foraging habitats due to fire suppression throughout the Teton Range. Additionally, ski area development has resulted in the direct loss of suitable bighorn sheep habitat; indirect loss of habitat through avoidance behavior and increased movements of bighorn sheep due to winter recreation that overlaps with important bighorn sheep wintering areas (Courtemanch 2014).

Fire can influence bighorn sheep distribution through changes in habitat conditions (e.g. vegetation type, seral stage, amount and quality of various habitats). Decades of fire suppression has altered natural fire regimes and changed vegetation and wildlife habitat. Continued fire suppression could result in further negative impacts to vegetation and wildlife habitat. Alternatively, decisions to manage wildfires could have long-term beneficial effects to bighorn sheep habitats if sight lines are opened and seral grass/forb habitats are restored. Fire can reduce dense forest growth improving sight lines which allow bighorn sheep to detect and evade predators. Improved forage conditions and increased forage availability also often result from fire and, when realized, may translate to higher survival and reproduction in bighorn sheep. The timing and specific locations of fire events would influence the magnitude and type of impacts and benefits. For example, fire management activities during the lambing season or near important habitat features (e.g., mineral licks, and water features) could displace bighorn sheep from these locations, whereas those occurring under other circumstances could have long-term beneficial effects as noted above.

Retirement of domestic sheep allotments on the west side of the Teton Range have had a beneficial effect on bighorn sheep by reducing the risk of contact and resulting pathogen transmission between domestic and bighorn sheep. However, domestic sheep grazing occurs on USFS lands in the Snake River Range directly south of the Teton Range and mountain goats there test positive for pneumonia-causing pathogens. The potential exists for mountain goats to disperse from the Snake River Range to the Teton Range. Although the likelihood of dispersal is unknown, it is likely related to population size: higher likelihood at higher population size. Although the risk of contact for new goats that disperse is unknown, the impacts of any contacts between mountain goats and bighorn sheep could be significant.

In the Teton Range outside of the park, many wildlife species, such as elk, mule deer, bighorn sheep, mountain goats, and predators, can be hunted. These seasons are managed by WGFD. Hunting in areas close to the park boundary could reduce the numbers of bighorn sheep within the park as these species generally range across political boundaries. However, hunting quotas are typically tied to herd unit objectives, and current harvest objectives for Teton Range bighorn sheep are conservative: 2 licenses for rams have been offered in recent years.

The park performs and authorizes various scientific surveys and research efforts within the action area (Figure 1). These studies have minimal impacts on wildlife and bighorn sheep in particular. These activities provide indirect benefits to wildlife and sheep by increasing the understanding of the status of wildlife populations and other resources of interest in the park. Wildlife monitoring from fixed-wing aircraft and helicopters occur within the action area several times throughout the year. Fixed-wing telemetry and observation flights have low potential to disturb bighorn sheep as these flights occur infrequently, at a time of year when habitat is not limiting, and generally are not over high use bighorn sheep habitats. On the other hand, winter helicopter surveys, helicopter supported search and rescue operations, and non-permitted scenic flight tours have some potential to disturb wildlife if they are encountered along flight paths. Such interactions could result in short-term (approx. ≤1 hour) increases in movement and physiological stress that would subside once the aircraft has passed. Aircraft landing and departing the Jackson Hole Airport typically follow designated flight paths away from the Teton Range, thus are unlikely to directly disturb bighorn sheep. However, incoming and outgoing aircraft and airport operations add to the background noise audible to bighorn sheep in the Teton Range.

Alternative A is expected to increase the likelihood for competition between bighorn sheep and mountain goats, particularly on limited winter ranges, as well as increase the potential for pathogen transmission between the two species. Although, wildland fire use or habitat treatments could have beneficial effects to bighorn sheep, the direct and indirect losses of habitat due to past, present, and reasonably foreseeable activities would continue to add to adverse cumulative impacts. Although some disturbance and behavioral changes associated with cumulative actions (e.g., visitation, some park operations, wildlife monitoring, etc.) would be temporary and small, others have had large-scale lasting impacts that continue to influence the tenuous status of the Teton Range bighorn sheep population. The incremental impacts of Alternative A would contribute substantial adverse impacts to those that are already occurring. If left unmanaged, the mountain goat population could impact the vital rates (i.e., survival/mortality, productivity, population change, etc.) of the bighorn sheep population and, thus, reduce the likelihood of population persistence.

Alternative B – Lethal Removal

Direct and Indirect Impacts

Impacts from monitoring mountain goats including deploying and maintaining remote cameras, helicopter captures, and helicopter based surveys would be the same as described for Alternative A.

Actions to monitor mountain goats, including helicopter capture or surveying, could disturb individual bighorns present in the vicinity. Helicopter overflights or landings could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5 minutes to 30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep would flee if a helicopter makes a direct or close approach (Frid 2003). Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale would be implemented (see Conservation Measures to Reduce or Avoid Potential Impacts section). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through Conservation Measures would reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

No impacts to bighorn sheep are anticipated from the use of low elevation frontcountry staging areas, as these locations are not within habitats used by bighorn sheep. However, short-term (several minutes to several hours), direct adverse impacts to individual bighorn sheep could result from mountain goat lethal removal activities due to noise and disturbance associated with the use of firearms and aircraft. The extent to which these impacts could affect the bighorn population would depend on the degree of overlap between the bighorn sheep and mountain goat populations.

Alternative B is expected to result in an approximately 90% reduction in the mountain goat population of roughly 100 animals (2018 estimate) within 1−5 years. Reduction and ultimate elimination of the

mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. Reductions in these risks could be achieved over a shorter seasonal time frame as well as overall time frame because of the greater efficiencies in lethal removal (minutes) compared to live capture and translocation (hours). Over the course of the population reduction phase (years 1-5), approximately 90-100 mountain goats would be killed and the majority of these carcasses would be left of the landscape. The number of individuals that would be lethally removed each year would depend on available funding and culling efficiency. At a minimum this could be 15-25 individuals annually or up to 75 individuals in the first few years.

In the short-term (several months annually over approx. 5 years), Alternative B would result in numerous carcasses on the landscape, which could result in temporary increases in the number of predators and scavengers for the time carcasses are present. Removal operations are expected to occur in the winter when bears (both black and grizzly) are hibernating. During the winter months, mountain goats generally occur at higher elevations than at other times of year (NPS unpublished data). Given the severe winter conditions and deep snow at these elevations, numbers of potential mammalian scavengers (e.g., wolverine, wolves, mountain lions, coyotes, foxes, etc.) would be low because travel is difficult and other food resources in the mountains are generally lacking. Similarly, numbers of avian scavengers (e.g., bald and golden eagles and corvids) are also expected to be limited that time of year. Carcasses would be relatively aggregated in space and time (e.g. primarily in the central portion of the Tetons where mountain goats occur for several weeks to several months in the winter/spring) and exploited by scavengers opportunistically. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep such a response if not anticipated for several reasons. Scavenger and predator populations typically increase via immigration (individuals moving into an area) or demographically (food surplus leading to improved condition of adults, larger litters, and higher survival of offspring). In mid-winter, the wolverine is the species most likely to be present in the high elevations of the project area where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because mountain goats and bighorn sheep currently occur in spatially distinct areas and the availability of carrion may divert predation away from live prey.

Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated. Reducing the mountain goat population is also expected to benefit the Teton Range bighorn sheep herd by eliminating a major population-level threat. Overall, the effects of Alternative B are expected to be substantial and beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for habitat and forage between bighorn sheep and mountain goats.

Cumulative Impacts

The cumulative impact scenario (geographic and temporal scope, past, present, reasonably foreseeable future actions) for the impacts on bighorn sheep would be the same as those discussed under Alternative A. Although the temporal scope of impacts from Alternative B would be ≤20 years, the mountain goat population reduction activities would mainly be limited to the first 5 years, with the most concentrated efforts to remove 90% of the animals in years 1−3. In later years, occasional actions would remove the few remaining goats, and any new ones that enter the park.

As described for Alternative A, other past, present, and reasonably foreseeable actions in the park and adjacent landscape have had and would continue to have overall adverse effects on bighorn sheep

primarily through the direct and indirect loss of habitat. These impacts influence the current distribution and tenuous status of the Teton Range bighorn sheep population. The potential direct and indirect impacts from Alternative B include short-term disruption of normal behaviors and increased stress in bighorn sheep during monitoring, removal, and/or other management activities. Reducing the mountain goat population is also expected to benefit the Teton Range bighorn sheep herd by eliminating a major population-level threat. Overall, the effects of Alternative B are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for habitat and forage between bighorn sheep and mountain goats. When the beneficial effects of Alternative B are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed by this plan the positive increment expected from Alternative B does not substantially change the overall cumulative impact.

Alternative C – Combination of Lethal and Nonlethal Removal

Direct and Indirect Impacts

Impacts related to management of nuisance mountain goats, lethal removal, and monitoring activities would be similar to those described under Alternative B. The impacts related to non-lethal removal of mountain goats via live capture and translocation would be similar to those described above under Alternative B for helicopter-based captures for monitoring purposes. During the first few years of active management, Alternative C would include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90-100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This would mean that risks to bighorn sheep from the presence of mountain goats would continue to exist until all mountain goats are removed. Because some mountain goats would be live captured and translocated, fewer individuals would be lethally removed over the course of the population reduction phase (years 1-5) and fewer carcasses would remain on the landscape. Potential impacts from carcasses remaining on the landscape would be similar to those described for Alternative B.

Indirect, adverse and beneficial impacts on bighorn sheep from the presence (or lack thereof) of mountain goats would also be similar to those described under Alternative B, although beneficial impacts may take longer to be realized due to the longer anticipated timeline for live removals. Any adverse impacts are expected to be short-term for duration that the mountain goat population persists, while beneficial impacts are expected to be long-term (10−20 years).

Cumulative Impacts

The cumulative impact scenario (geographic and temporal scope, past, present, reasonably foreseeable future actions) for the impacts on bighorn sheep is the same as described for Alternative B. Impacts on bighorn sheep from these past, present and reasonably foreseeable actions would be the same under Alternative C as those described for Alternative A.

As described for Alternative A, other past, present, and reasonably foreseeable actions in the park and adjacent landscape have had, and would continue to have, overall adverse effects on bighorn sheep primarily through the direct and indirect loss of habitat. These impacts influence the current distribution and tenuous status of the Teton Range bighorn sheep population. The potential direct and indirect impacts from Alternative C include short-term disruption (several minutes to hours) of normal behaviors and increased stress in bighorn sheep during monitoring, capture and translocations, removal, or other

management activities. Reducing the mountain goat population is also expected to benefit the Teton Range bighorn sheep herd by eliminating a major population-level threat. Overall, the effects of Alternative C are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. When the beneficial effects of Alternative C are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed by this plan, the positive increment expected from Alternative C does not substantially change the overall cumulative impact.

Vegetation and Soils

Affected Environment

The Teton Range rises from the Jackson Hole valley floor (approx. 6,500 feet) to the top the Grand Teton (13,770 feet). Vegetation communities vary across this elevational gradient (Knight et al. 2014). Over 80% of the plant taxa in the park occurs within an elevation range of 7,500 to 11,000 feet. The affected vegetation environment can best be described in terms of vegetation communities – recurring assemblages of vegetation that include, and are characterized, by a suite of species. The Grand Teton National Park 2002−2005 Vegetation Mapping Project Final Report (Cogan, et al. 2005) and its appendices describe a total of 167 plant associations, while the accompanying map is divided more coarsely into 35 vegetation types, 24 of which occur in the project area. These vegetation zones and types are described in more detail below.

High-elevation plants experience harsh climatic conditions and a short growing season. They generally flower and reproduce in a short period of time in mid-summer. If plants are consumed or damaged at this time they will not only be destroyed but will not be self-replacing on the landscape. Winter feeding on senescent plant material removes biomass and alters plant conditions, but has less effect on reproduction than summer use of rapidly growing and reproducing plants.

Nonnative invasive plant species occur in the park, including areas where mountain goats occur. Invasive plants are more common in the lower elevation habitats than the high elevation vegetation types where mountain goats occur.

Soils in the park are described in the Soil Survey Teton County, WY Grand Teton National Park Area (USDA Soil Conservation Service 1982). Soils can be categorized in several ways: parent material, texture, or stability, and vary over the area of interest. The soils classified in the project area (USDA Soil Conservation Service 1982) are a mixture of Rubble land (talus and boulder fields), rock outcrops, and soils which are generally very shallow. Mid-slopes may have deeper soils. Slopes range from gently sloping to steep, thus soils can be highly erosive. More than 90% of the project area is classified as one of two units: the "Rock-outcrop-Rubble land Leighcan," which makes up about two-thirds of the project area, and the "Starman-Rubble land-Midfork" unit makes up about one-third of the area. The project area is 40−45% rock outcrops, 20−25% rubble lands, and 30−40% soil. The soils vary with topographic position with generally thin cobbly soils on ridges, stony sandy loam soils on mid to upper slopes and deeper soils comprised of stony loam or stony clay loam on lower slopes and toe slopes. Poor soil development and frequent soil movement is common throughout the project area.

Alpine vegetation–True alpine vegetation communities occur in the park in locations ≥9,000 feet that are sparsely vegetated. These areas are intermixed with numerous non-vegetated cliffs and rock faces,

boulder fields, and snowfields. Mapped alpine vegetation occupies approximately 32,000 acres, including about 10,000 acres of alpine meadows and limestone pavement vegetation, and approximately 22,000 acres of cliff and talus sparse vegetation. These communities grow in sites with little soil development, subject to harsh weather conditions, and a brief growing season with shifts from water-saturated to drought conditions in a matter of days. These communities are dominated by perennial tufted or mat-forming herbs and by prostrate or ground-hugging shrubs. Dwarf shrublands occur just above treeline, occupy approximately 675 acres, and are dominated by two arctic willow (*Salix arctica)* associations – Arctic Willow-Alpine-Willow/White Marsh-marigold Dwarf-shrubland and Arctic Willow/American Bistort Dwarf-shrubland. These shrub communities occur in mosaics of meadows, tundra, talus communities, barren areas, and bare rock. Mat-forming cushion-plant alpine tundra communities include flowering plants (Rocky Mountain phlox (*Phlox multiflora*), twinflower sandwort (*Minuartia obtusiloba*), creeping sibbaldia *(Sibbaldia procumbens),* Gordon's ivesia (*Ivesia gordonii*), and matted buckwheat (*Eriogonum caespitosum*)), and grasses such as rough bentgrass (*Agrostis scabra*), Parry's rush (*Juncus parryii*), Payson's sedge (*Carex paysonis*), alpine bluegrass (*Poa alpine*), and tufted hairgrass (*Deschampsia cespitosa*). In talus, cliffs and rock crevices plant species including yellow dot saxifrage (*Saxifraga bronchialis),* alpine smelowskia (*Smelowskia calycina),* American rockbrake *(Cryptogramma acrostichoides)*, and alumroot brookfoam *(Telesonix heucheriformis)* are more common.

Treeline vegetation–Treeline vegetation occurs commonly between 9,500−10,000 feet and is characterized by a mosaic of alpine vegetation and/or sub-alpine vegetation, and stunted or krummholz conifer trees which grow prostrate due to the harsh conditions. High wind, low temperatures, low moisture, and poor soil development characterizes the treeline and alpine areas. These "trees" generally reach only 3−4 feet in height with the occasional emergent trunk reaching higher. Dominant tree species include Englemann spruce (*Picea engelmanii*), subalpine fir (*Abies lasiocarpa*), and whitebark pine (*Pinus albicaulus*).

Sub-alpine mixed conifer forest–Sub-alpine forests dominate the landscape from about 7,000−9,500 feet. These forests can be dominated by one or several tree species: lodgepole pine (*Pinus contorta*), Engelman spruce, subalpine fir, and whitebark pine. The most common of these types is referred to as spruce-fir forest, and Engelmann spruce and subalpine fir are often co-dominant. Common understory shrubs include Rocky mountain maple (*Acer glabrum var glabrum*), gooseberry currant *(Ribes montigenum)*, and grouse whortleberry (*Vaccinium scoparium*), and occasionally low-growing common juniper (*Juniperus communialis*). Common forbs include heartleaf arnica (*Arnica cordifolia*), broadleaf arnica (*arnica latifolia),* Hitchcock's smoot woodrush (*Luzula glabrata var hitchcockii),* spike trisetum (*Trisetum spicatum),* western sweetvetch (*Hedysarum occidental),* and goosefoot violet (*Viola purpuea* ssp. *venosa*). In many areas the spruce-fir forest is dense, blocking light, resulting in a relatively unproductive understory. Where whitebark pine is dominant, common understory species also include Ross' sedge (*Carex rossii*) and smooth woodrush (*Luzula piperi*).

Whitebark pine–Whitebark pine occurs primarily within the park's treeline vegetation and sub-alpine conifer forests as described above. At treeline habitats, whitebark pine occurs in scattered copses of stands and is typically stunted and growing prostate as krummholz stands. At lower elevations, whitebark pine occurs within mixed conifer stands and is less prominent at lower elevations due to increase conifer competition. Whitebark pine regeneration will occur throughout the elevational gradient within these zones.

The USFWS has designated whitebark pine as a "Candidate Species" under the Endangered Species Act (ESA) where a proposed rule of the ESA listing has been warranted but precluded from protection due to other priorities (USFWS 2011). As such, whitebark pine does not have ESA protection at this time. However, it is considered a species of concern for the NPS, thus requiring special attention and management consideration where warranted (NPS 2006).

Whitebark pine, throughout its range within the northern U.S. Rocky Mountains, has decreased significantly and it distribution, abundance and survival has been under threat due to a combination of nonnative white pine blister rust (*Cronartium ribicola*), native mountain pine beetle (*Dendroctonus ponderosae*), changes in fire regimes, and potential climate change scenarios (Tomback et al. 2001). In the park, as well as throughout its range in the Greater Yellowstone Area, whitebark pine is monitored to determine trends in the health, reproduction and survivorship of whitebark pine in the ecosystem (Shanahan et al. 2017).

Sub-alpine and montane shrubland–Occurring at elevations from 7,000−9,000 feet, montane and sub-alpine shrublands are generally located on slopes and in drainages. Species co-occur in both the montane and subalpine zones. Avalanche paths and small drainages are frequently dominated by species including Rocky mountain maple, mountain ash (*Sorbus scopulina),* serviceberry (*Amelanchier alnifolia*), huckleberry (*Vaccinium spp*), and in the montane zone small aspen (*Populus tremuloides*). Scrublands dominated by multiple willow species occur along streams and in areas of high moisture.

Sub-alpine herbaceous–Herbaceous meadow communities ranging from 8,000−9,500 feet include a wide range of flowering species. These can grow on slopes, in talus, at the bases of steep rock faces, and on ledges. Common species in these communities include tall forbs such as western aster (*Symphyotrichum ascendens*), subalpine fleabane *(Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium sp*). Rocky outcrops and cliffs are home to species including spike fescue (*Leucopoa kingie*), wallflower (*Erysimum capitatum*), and Whipple's penstemon (*Penstemon whippleanus*). More mesic sites frequently include: alpine laurel (*Kalmia microphylla),* tall fringed bluebells (*Mertensia ciliate*), and shootingstar (*Dodecatheon pulchellum*). Drier and sparsely vegetated montane and sub-alpine slopes are more commonly dominated by forbs including Wyeth biscuitroot (*Lomatium ambguum*), hawksbeard (*Crepis spp.*), silverleaf phacelia (*Phacelia hastate*), and blue penstemon (*Penstemon cyaneus*).

Montane herbaceous meadows–These communities (6,500−8,500 feet) transition smoothly and overlap in composition with sub-alpine herbaceous communities. Mesic montane meadow dominants include tall fringed bluebells, common cow parsnip (*Heracleum maximum*), western coneflower (*Rudbeckia occidentalis*), sticky geranium (*Geranium viscossisimum*), fernleaf licorice-root (*Ligusticum filicinum*), and subalpine larkspur (*Delphinium occidentale*). Drier sites less commonly intergrade with the sub-alpine meadows and include a suite of more pre-dominantly lower elevation species such as arrowleaf balsamroot (*Balsamhoriza sagittata*), blue flax (*Linum lewisii*), yarrow (*Achillea millefolium*), and the suite of grasses, purple onion grass (*Melica spectabilis*), Sandberg's bluegrass (*Poa secunda*), Hood's sedge (*Carex hoodia*), and mountain brome (*Bromus marginatus*).

Montane mixed-conifer forest–Mixed conifer forests of the montane zone are commonly characterized by a shrubby or unproductive understory. Common tree species include lodgepole pine, Douglas fir, and subalpine fir. Understory species frequently include huckleberry (*Vaccinium* species), Geyer's sedge (*Carex geyeri*), Engelmann's aster (*Aster engelmanii*), and heartleaf arnica (*Arnica cordifolia*).

Environmental Consequences

Alternative A – No Action

Direct and Indirect Impacts

Mountain goats currently use different physical and vegetative habitats at varying levels (Schreiner 1994). Mountain goat-habitat analysis in the park and elsewhere indicate that mountain goats primarily use rock outcrops and cliffs, alpine vegetation and treeline vegetation, including whitebark pine stands. To a lesser extent, mountain goats use subalpine conifer, shrubland and herbaceous vegetation, and have shown the least use of montane forest and nonforest communities. Current effects to soils and vegetation from mountain goat presence observed by park wildlife staff on mountain surveys include seasonal herbivory, trailing, and trampling, and wallowing with localized direct impacts on high elevation vegetation and soils.

The mountain goat population would increase in size for the foreseeable future under Alternative A. Current impacts of mountain goats, include direct herbivory on individual plants (e.g., alpine and subalpine grass, forb, shrub and conifer tree species), and bedding and wallowing, which would negatively impact both vegetation and soils. With increasing population size these effects would increase (Houston et al. 1994).

Mountain goats are generalist herbivores and require plant nutrition to survive. They are known to spend most of their lives at high elevation areas, frequenting cliffs and ledges. They return to the same areas for the winter in most years, frequently to the exact locations for multiple years. These foraging behaviors have direct impacts on localized high elevation trees and plants by removing or disturbing them. High-elevation plants experience harsh climatic conditions and a short growing season. They generally flower and reproduce in a brief time in the mid-summer. If plants are consumed or damaged by mountain goats at this time, they will not only be destroyed but would not be self-replacing. Winter feeding on senescent plant material removes biomass and alters plant conditions, but has less effect on reproduction than summer use of rapidly growing and reproducing plants (Houston et al. 1994).

Mountain goat herbivory would affect some plant species more than others and may affect plant community composition. Some species would decrease and others would increase due to a combination of goat preference for certain species and species-specific characteristics, which include varied tolerances to herbivory, and effects of herbivory on regeneration (Houston et al. 1994). Mountain goats would cause greater vegetation impacts in the alpine and subalpine zones than in the montane areas due to the shorter growing season, shallower soils, and substantially more intensive use of these. In the subalpine zone, impacts of wallowing could include damage to and removal of grasses, forbs, and tree seedlings. Whitebark pine and subalpine fir are slow-growing high elevation trees whose seedlings could readily be uprooted by wallowing resulting in mortality and a lack of regeneration success.

Grazing pressure would likely intensify in the more commonly used habitats and in habitats that remain snow-free (e.g., rock outcrops, cliffs, and south-facing canyon walls). Tree and species that grow in these harsh conditions are likely to be most impacted and may not be able to maintain the population sizes in which they presently occur. As mountain goats are known to return to the same wintering sites year after year (Smith 2014), it is likely that localized areas would experience greater impacts.

An assessment of mountain goat locations by time and vegetation type (NPS unpublished data 2017) indicates that mountain goats spend over 45% of their time in areas of rock outcrops and cliffs, 23% in

Krummholz whitebark pine woodlands, and the remaining time in alpine herbaceous and other vegetation types. In particular, high elevation vegetation receives disproportionately higher use by mountain goats, due to animals seeking shelter in the harsh upper subalpine to alpine environments.

Soil effects would include erosion and compaction, which reduces available soil for plant growth. This decreases the potential for recolonization by native tree and other plant species, and likely decreases plant populations in the areas of high mountain goat use.

In addition to herbivory, trailing, and trampling, wallowing is mountain goat behavior with direct impacts on native vegetation and soils. Wallowing removes soil surface layers and that decreases water-holding capacity and the nutrients available for vegetation, and increases soil aeration and surface temperature. The soil disturbance from mountain goat wallowing provides less stability for plant regeneration. These changes to the soil can cause major shifts in plant community composition around wallow edges (NPS 1995).

Each mountain goat wallow results in approximately 20 square feet of vegetation removed, which results in exposed ground surface and disturbances to bare mineral soil (Festa-Bianchet and Côté 2008). This condition removes vascular and non-vascular plant material resulting in no growth, no photosynthesis, and an open area available for colonization by other plant species, native or nonnative. Seeds carried on the hooves or fur of animals, or by the wind are readily introduced to these areas. Increased erosion would result from exposure of the soil surface. The current number of goat-created wallows is unknown. However, it is anticipated that the estimated number of wallows would increase as the population expands proportionately under Alternative A.

Monitoring/management activities under Alternative A would include some use of artificial baits and helicopter-assisted capture of mountain goats for radio-collaring for future monitoring or to remove nuisance animals for human safety. These sites occur within the high-elevation vegetation types and can range from 400−3,600 square feet. The use of artificial baits (mineral licks) to attract mountain goats for monitoring, common to all alternatives, would likely result in increased bedding, trampling, and trailing effects on soils, and increased localized herbivory in one to two areas in the alpine zone which are likely to require decades to recover native plant community functions. Helicopter landings would target snowfields in the backcountry and existing staging areas/helispots to avoid affecting undisturbed vegetation. Backcountry landing locations would be recorded to facilitate any revegetation that might be needed, and would not be used repeatedly so any ground or vegetation disturbance is expected to be minimal.

Whitebark pine would continue to be impacted as mountain goats trample, wallow, and rub trees within the high elevation treeline and krummholz habitats. Impacts, as described above, from herbivory, trampling, and soil erosion and disturbance has occurred in and around whitebark pine stands. Under Alternative A, impacts from trampling and wallowing would become more prevalent as mountain goat populations increase, which would result in diminished vigor, abundance and survivability in whitebark pine at the localized level.

Overall, Alternative A would result in continued and increased adverse impacts on high elevation vegetation and soils due to higher mountain goat numbers and resultant increases in herbivory, as well as trampling, soil erosion, and disturbance associated with bedding, wallowing, and rubbing. The results of these localized impacts would increase the area of bare ground, decrease the abundance of native plant communities, and potentially lead to increase of invasive vegetation in the alpine and treeline habitats of the park. These negative impacts would increase over the long term as the mountain goat population grows. Vegetation removal and damage would be more severe in the high elevation areas goats currently prefer, and more areas would be affected as their range expands. The impacts would be geographically

localized and variable on the high elevation vegetation habitats where mountain goats occupy, specifically, rock outcrops, and alpine vegetation. Whitebark pine would be impacted as mountain goats trample, wallow tree-rub within the high elevation treeline and krummholz habitats.

Cumulative Impacts

Under Alternative A, the geographic scope of the impacts on vegetation and soils is the Teton Range alpine and subalpine environments where goats live, as well as areas near frontcountry staging areas/helispots. The temporal scope is the approximately 20-year life of the plan. Past, present, and reasonably foreseeable future human actions in the park that would have cumulative impacts on plants and soils include the impacts of park visitors and staff traveling primarily off-trail, vegetation monitoring and research activities, trail maintenance activities, and herbivory and trampling of vegetation by pack stock and other wildlife species. Introduction and proliferation of nonnative invasive plant species would occur within the park and the surrounding areas that impact soils and native vegetation. Collectively, all of these actions have had and would continue to have adverse cumulative impacts on vegetation and soils.

As previously described, the direct and indirect impacts of Alternative A on vegetation and soils, including krummholz and whitebark pine stands, would result in continued and increased adverse impacts on high elevation vegetation due to higher mountain goat numbers and resultant increases in herbivory, as well as trampling, soil erosion, and disturbance associated with bedding, wallowing, and rubbing. When the effects of the alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils would continue to be adverse. The incremental impacts of the alternative would contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the alternative would contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Alternative B – Lethal Removal

Direct and Indirect Impacts

Under Alternative B the impacts of nonnative mountain goat herbivory, trampling, bedding, and wallowing would be expected to decrease incrementally as the population of mountain goats in the project area decreases. This would improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, unhindered by mountain goat herbivory, and soil disturbance. The diminishing of goat-caused disturbance and bare ground would also lessen the potential of nonnative plant species introduction. Similarly, as mountain goats and their impacts are diminished with incremental removal, high elevation whitebark pine and krummholz habitats would benefit with fewer and eventually no mountain goats trampling, wallowing and foraging within these habitats, thus supporting the perpetuation of native plant communities and processes. Baiting and capturing, as described in Alternative A, would be intensified briefly during goat removal operations. However, this short-term localized activity would cause minimal impact to native high elevation vegetation and soils.

Cumulative Impacts

Under Alternative B, the geographic scope and the past, present, and reasonably foreseeable future actions that adversely impact vegetation and soils would be similar to those described under Alternative A.

As previously described, the direct and indirect impacts of Alternative B on vegetation and soils, including krummholz and whitebark pine stands, would gradually result in a beneficial effect on high elevation vegetation. As the mountain goat population is reduced under this alternative, goat use of herbivory, trampling, soil erosion, and disturbance associated with foraging, bedding, wallowing and tree running would decrease incrementally. When the effects of the alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils would be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative would contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the alternative would contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under Alternative C, there would be additional activity associated with increase handling of mountain goats in this alternative that would lead to more sites where localized vegetation would be affected. The removal of mountain goats would reduce adverse impacts on soils and native plant communities in the alpine and sub-alpine zones. Herbivory, wallowing, and soil compaction would be decreased, though not as rapidly when utilizing only lethal removal techniques. Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact would be short-term (1 to 3 years to allow for impacted vegetation to recover).

Actions under Alternative C would lead to diminishing adverse impacts and would also have localized beneficial long-term effect on high elevation vegetation and soils: it would reduce or eliminate mountain goat presence and diminish the impacts of nonnative mountain goat herbivory, trampling, and wallowing, thus supporting the perpetuation of native plant communities and processes. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats would receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Cumulative Impacts

Under Alternative C, the geographic scope and the past, present, and reasonably foreseeable future actions that adversely impact vegetation and soils would be similar to those described under Alternative A.

As previously described, the direct and indirect impacts of Alternative C on vegetation and soils, including krummholz and whitebark pine stands, would gradually result in a beneficial effect on high elevation vegetation. As the mountain goat population is reduced under this alternative, goat use of herbivory, trampling, soil erosion, and disturbance associated with foraging, bedding, wallowing and tree running would decrease incrementally. When the effects of the alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils would be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative would contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the alternative would contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Wilderness Character

Affected Environment

The mountain goat management area is located within areas identified as recommended, potential, or eligible for wilderness designation (Figure 1). The areas include approximately 143,000 acres in the park recommended in 1978 to Congress, and approximately 21,500 acres in the parkway, determined eligible by the National Park Service Director in 2013.

The impacts of each of the alternatives are based on the proposed mountain goat management plan wilderness MRA (NPS 2017) which focuses on the five qualities of wilderness character. Together, the five qualities are used to monitor how stewardship actions, impacts from modernization, and other changes occurring outside of a given wilderness area affect the wilderness area over time (NPS 2015a).

1. **Untrammeled:** *Wilderness is essentially unhindered and free from modern human actions that control or manipulate the community of life.*
2. **Natural:** *Wilderness maintains ecological systems that are substantially free from the effects of modern civilization.*
3. **Undeveloped:** *Wilderness retains its primeval character and influence, and is essentially without permanent improvements or modern human occupation.*
4. **Solitude or Primitive and Unconfined Recreation:** *Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation.*
5. **Other Features of Value:** *Wilderness may also contain other features of scientific, educational, scenic, or historical value.*

The **solitude or primitive and unconfined recreation** wilderness character analysis takes into consideration impacts on natural soundscape and visitor use and experience within wilderness. These two impact topics are included in the analysis below.

The **other features of value** within the wilderness consists of the Teton Range and surrounding lakes, Native American sacred areas and archeological sites, and historic trails and patrol cabins constructed by the Civilian Conservation Corps (NPS 2015a). Mitigation measures would be in place to ensure these other features of value are not adversely affected by the actions described in the alternatives. Therefore, the **other features of value** in wilderness character quality is not carried forward in the following impact analysis.

The following impact analysis pertains to the park wilderness areas for ≥20 years.

Environmental Consequences

The impacts described for each of the alternatives take into account the use of helicopters and fixed-winged aircraft (collectively called aircraft flight operations) and small temporary installations for the luring, capturing, and handling mountain goats and bighorn sheep. An alternative that does not utilize mechanized transport and installations was analyzed in the wilderness MRA and dismissed in the "Alternatives Considered but Dismissed" section of this EA.

Alternative A – No Action

Direct and Indirect Impacts

Under this alternative, it is anticipated that field activities would occur for ≥20 years. This alternative would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live-capturing mountain goats for monitoring purposes and the disposal of carcasses if animals are seriously injured during implementation of non-lethal monitoring activities. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to an estimated ≤20 administrative flight operations per year, the use of small installations (baits) to lure and capture mountain goats, and the placement of collars and/or other tracking devices to monitor mountain goat locations. Direct and indirect impacts from field activities would be ≥20 years due to the existence of lures and tracking devices in wilderness. This alternative would have a negative effect on the **natural** quality of wilderness because mountain goats would continue to inhabit and reproduce in wilderness. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation** quality of wilderness because the occurrence of aircraft flight operations and other field activities would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative A, wilderness character (collectively the wilderness qualities described above) would continue to be adversely affected over the long-term by the ever-increasing nonnative mountain goat population. This effect would persist as long as mountain goats are present in park wilderness. The short-term effects resulting from monitoring activities would exacerbate these effects, because these monitoring actions do nothing to remove the mountain goat population.

Cumulative Impacts

The NPS monitors wilderness character in the park wilderness areas to better understand and respond to cumulative impacts. Past, present, and reasonably foreseeable future actions that adversely impacts the five wilderness character qualities include a variety of actions undertaken by the NPS or by individuals or groups authorized under a special use permit or other approval. Administrative actions undertaken by the NPS within wilderness include activities that intentionally manipulate native and nonnative (exotic) vegetation and wildlife (native plant restoration, capturing and collaring wildlife, and using herbicides), and wildland fire management; utilize mechanized transport, motorized equipment, and structures and installations; and inventory, monitor, and research of the wilderness resource. Authorized activities routinely conducted by individuals and groups within wilderness that require a permit or other approval include backcountry camping, guided services, and commercial filming. Unauthorized visitor activities that occasionally occur within wilderness include backcountry camping in areas outside of designated camping zones or sites, guided services, commercial filming, and the intentional or unintentional collection or destruction of natural and cultural resources. These administrative and authorized activities would continue to have negative effects on the untrammeled, natural, undeveloped, and solitude or primitive and unconfined recreation wilderness character qualities. The duration of these effects would vary by season and year, but are expected to remain in the distant future (multiple decades) as long as these activities are permitted to continue to occur in wilderness.

The 2015 wilderness character monitoring baseline data value for authorized administrative flight operations in the wilderness is 47 operations per year. These operations would occur annually within the project area for wildlife research and monitoring; search and rescue operations; flight training; supply and infrastructure transport; trail, bridge, and cabin maintenance projects; and fire surveillance and suppression (NPS 2015a). In addition to these recurring administrative flights, ≤20 mountain goat-related aircraft operations would occur annually to monitor distribution, movement, demographics, and population numbers; conduct disease testing; and when needed, remove animals due to threats to visitor

and employee safety. An increase of 15% or more in the number of authorized administrative flight operations above the baseline number (seven additional operations per year) would be considered an adverse cumulative effect on the undeveloped quality of wilderness because the number of aircraft activities, especially during the winter months, would be noticeable by visitors. Any increase to the number and extent of visitor behavior restrictions, such as temporary area closures, would have an adverse cumulative effect on solitude or primitive and unconfined recreation quality of wilderness because the additional closures would likely affect more visitors. Conversely, the removal of all mountain goats from wilderness would have a beneficial cumulative effect on the natural quality of wilderness (NPS 2015a) because the nonnative species would be removed from wilderness.

Under Alternative A, the increment contributed by the direct and indirect impacts would result in no change in the cumulative impacts for the **untrammeled** quality in wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts of leaving goats in place would have an adverse cumulative effect on the **natural** quality of wilderness. The increment contributed by the direct and indirect impacts of ongoing authorized administrative flight operations up to 20 per year over the 2015 baseline of 47 operations would have a cumulative adverse effect on the **undeveloped** quality of wilderness. The increment contributed by the direct and indirect impacts of anthropogenic noise on the natural soundscape from the additional authorized administrative flight operations per year would have a cumulative adverse effect on the **solitude or primitive and unconfined recreation** quality of wilderness. Taken together, when the adverse effects of Alternative A are combined with the collective effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on wilderness character (collectively the wilderness qualities described above), would remain adverse. The incremental impact of Alternative A would substantially change the overall cumulative impact because of the ever-increasing nonnative mountain goat population.

Alternative B – Lethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to lethally remove goats would continue for ≥20 years. The lethal removal alternative would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats for monitoring purposes and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤35 administrative flight operations per year for lethal removal and monitoring activities, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. This alternative would have a positive effect on the **natural** quality of wilderness because exotic mountain goats would be removed from wilderness. This alternative would have a negative effect on the natural quality of wilderness because carcasses would be disposed in wilderness. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation** quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative B, wilderness character (collectively the wilderness qualities described above) would be mostly adversely impacted during the fall and winter months when lethal removal and monitoring activities occur. However, this short-term impact would diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

Cumulative Impacts

The NPS administrative actions, authorized and unauthorized visitor activities, and wilderness character monitoring 2015 baseline data explanation are the same as described above in Alternative A.

The increment contributed by the direct and indirect impacts would be slightly greater in the cumulative impacts for the **untrammeled** quality of wilderness because of the short-term (during scavenging and decomposition) presence of mountain goat carcasses. The increment contributed by the direct and indirect impacts would have a substantial cumulative beneficial effect on the **natural** quality of wilderness because mountain goats would be lethally removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations (days of flights) up to 35 per year over the 2015 baseline of 47 operations would have a noticeable cumulative adverse effect on the **undeveloped** quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise would have similar short-term and long-term adverse cumulative effects on the **solitude or primitive and unconfined recreation** as those described for the undeveloped quality of wilderness. Potential temporary area closures would have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), Alternative B would substantially change cumulative effects for the better.

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to lethally remove goats would continue for a period of ≥20 years. The lethal removal alternative would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the undeveloped quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural** quality of wilderness because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful This alternative would have a negative effect on the **solitude or primitive and unconfined recreation** quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly impacted during the fall and winter months when lethal removal and monitoring activities

occur. However, this short-term impact would diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

Cumulative Impacts

The NPS administrative actions, authorized and unauthorized visitor activities, and wilderness character monitoring 2015 baseline data explanation are the same as described above in Alternative A.

The increment contributed by the direct and indirect impacts would result in no change in the cumulative impacts for the **untrammeled** quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts would have a substantial cumulative beneficial effect on the **natural** quality of wilderness because mountain goats would be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations would have a noticeable cumulative adverse effect on the **undeveloped** quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise would have similar short-term and long-term adverse cumulative effects on the **solitude or primitive and unconfined recreation** as those described for the undeveloped quality of wilderness. Potential temporary area closures would have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), Alternative C would substantially change cumulative effects for the better.

CHAPTER 4: Consultation and Coordination

In May 2013, the NPS sent letters to Wyoming Game and Fish Department (WGFD), Idaho Fish and Game Department, the US Forest Service (BTNF and CTNF), and the US Fish and Wildlife Service (USFWS). The letters announced the park intention to develop a mountain goat management plan and environmental assessment, and requested feedback on the proposal. Responses included support of the concept of controlling mountain goats in the park, the wish to be involved in further discussions if relocation outside the park is analyzed, interest in learning about NPS strategies to deal long-term with mountain goats that move into the park in the future, concern about potential disturbance to Teton Range bighorn sheep if an action alternative is selected, interest in better understanding the disease implications for bighorn sheep if the no action alternative is selected, and desire to work with the park analysis team on potential effects of the alternatives on adjoining National Forest System lands. During development of this plan, park staff have continued to coordinate with WGFD biologists regarding the status and management of mountain goats outside the park.

The park obtained an official list of endangered species from the USFWS Information, Planning, and Conservation System (IPAC) website (https://ecos.fws.gov/ipac/location/2FZ7E4JCV5FXXPR353WXKJ4USQ/resources) on 1/31/2017. Consultation will be initiated upon public release of the EA.

Public scoping to assist with the development of this document began on November 12, 2013 with a press release to media outlets and a letter (sent to approximately 450 interested parties, including individual members of the public, state and federal agencies, local town government, and non-government organizations). The public was directed to the NPS Planning, Environment, and Public Comment (PEPC) website for information, and asked to comment, identify key concerns, and provide ideas about how best to manage mountain goats in the park. The park received 22 correspondences during the public scoping comment period. Substantive comments included recommendations for the NPS to work closely with other agencies, to provide public education and outreach, and to focus on ecological integrity versus invasive species management; and concerns about the Teton Range bighorn sheep population, and about mountain goats continuing to come into the park after eradication efforts.

The park sent letters to 24 affiliated tribes (Coeur d'Alene Tribe of the Coeur d'Alene Indian Reservation; Assiniboine and Sioux Tribe of the Fort Peck Reservation; Comanche Nation, Oklahoma; Confederated Salish and Kootenai Tribes of the Flathead Reservation, Montana; Confederated Tribes of the Colville Reservation; Fort Belknap Indian Community of the Fort Belknap Reservation of Montana; Shoshone Tribe of the Wind River Reservation; Confederated Tribes of the Umatilla Indian Reservation; Crow Tribe; Arapaho Tribe of the Wind River Reservation, Wyoming; Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation; Blackfeet Tribe of the Blackfeet Indian Reservation; Shoshone-Bannock Tribes of the Fort Hall Reservation; Yakama Nation; Burns Paiute Tribe; Kiowa Indian Tribe of Oklahoma; Apache Tribe of Oklahoma; Nez Perce Tribe of Idaho; Rosebud Sioux Tribe; Kootenai Tribe of Idaho; Oglala Sioux Tribe; Standing Rock Sioux Tribe; and Yankton Sioux) in late 2013 and early 2014. The letter, as well as emails and telephone calls, informed them about the developing plan/EA, summarized how exotic mountain goats came to be in the park, and asked to hear concerns and ideas. Five tribes indicated they would like to be listed as interested parties and continue to hear from the park about the management plan. Subsequent letters were sent to the Tribes on August 2, 2018 requesting specific feedback on the alternatives and potential resource impacts. Tribal consultation is continuing.

The park's National Historic Preservation Act (NHPA) Section 106 Coordinator contacted the Wyoming State Historic Preservation Officer (SHPO) on April 6, 2018. The park's Coordinator and SHPO agreed

that the proposed actions described in this plan/EA would have "no potential to cause effect" on cultural resources. This informal determination and concurrence has been documented in writing for the administrative record. Archeological resources, historic structures, and cultural landscapes have been dismissed as impact topics.

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Kelly McCloskey, Ecologist
Daniel Noon, Chief of Planning
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Fwd_ GRTE_JODR Mountain Goat Management Plan_EA....pdf

From:	Rice, Heather
To:	Daniel Noon
Cc:	Daniel Niosi; Joe; Nida
Subject:	Fwd: GRTE/JODR Mountain Goat Management Plan/EA Draft FONSI Review Request (PEPC 47959)
Date:	Friday, August 16, 2019 1:48:37 PM
Attachments:	Draft Mountain Goat Management Plan EA FONSI (2019_08_08) IMR EQ Rice Comments 8-9-19.docx

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Hi Daniel,

Since I'll be out next week, when you're done revising the FONSI please send it to Dan Niosi, Joe Neubauer, and Nida Holiday so one of these fine folk can route it to the RD in my stead. Thanks!

Heather
****

Heather Rice
NEPA Specialist, Environmental Quality Division
Intermountain Region, National Park Service
12795 West Alameda Parkway | Denver, CO 80228
303-969-2975 office | 303-969-2717 fax
heather_rice@nps.gov | IMR-EQ Sharepoint Site

Have you seen the 2015 NPS NEPA Handbook??
Click here to check it out!

Plato on NEPA: "The beginning is the most important part of the work."

---------- Forwarded message ---------
From: **Rice, Heather** <heather_rice@nps.gov>
Date: Fri, Aug 9, 2019 at 12:15 PM
Subject: Re: GRTE/JODR Mountain Goat Management Plan/EA Draft FONSI Review Request (PEPC 47959)
To: Noon, Daniel <daniel_noon@nps.gov>
Cc: Dan Niosi <dan_niosi@nps.gov>, Nida Shaheen <nida_shaheen@nps.gov>, Susan (Sue) Consolo-Murphy <sue_consolo-murphy@nps.gov>, David Gustine <dave_gustine@nps.gov>, Sarah Dewey <sarah_dewey@nps.gov>

Hi Daniel,

I've finished my review of this FONSI. This was a very nicely written document so thank you to you and your team! I've uploaded my comments to PEPC and have also attached them below. Please let me know if you have any questions or disagree with any of my comments.

Cheers,
Heather
****

Heather Rice
NEPA Specialist, Environmental Quality Division
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heather_rice@nps.gov | IMR-EQ Sharepoint Site

Have you seen the 2015 NPS NEPA Handbook??
Click here to check it out!

Plato on NEPA: "The beginning is the most important part of the work."

On Thu, Aug 8, 2019 at 1:13 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

> Hello,
>
> The Grand Teton National Park (GRTE) and John D. Rockefeller, Jr. Memorial Parkway (JODR) Mountain Goat Management Plan / Environmental Assessment Finding of No Significant Impact (FONSI) is ready for regional Environmental Quality review.
>
> The draft FONSI is located at the top of the Internal Documents list of PEPC 47959. The document adheres to the guidance in the 2015 NPS NEPA Handbook and related supplements.
>
> Please contact me if you have any questions or wish to discuss the document.
>
> Thank you.
>
> Daniel Noon
> Chief of Planning and Environmental Compliance
> Grand Teton National Park
> John D. Rockefeller, Jr. Memorial Parkway
> (307) 739-3465
> Email: daniel_noon@nps.gov

Draft Mountain Goat Management Plan EA FONSI _7.pdf

DRAFT

[redacted]

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins~~**[NAME]**~~ Date
Acting Regional Director, NPS Intermountain Region
DOI Unified Region 7 – Upper Colorado Basin

Commented [h1]: Stay tuned…we're still checking on how this needs to be written.

DRAFT

38

DRAFT

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. To the extent necessary, relevant sections of the EA are incorporated by reference below.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) with modifications to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities.

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The selected alternative will implement a management plan to remove non-native mountain goats from the park using a combination of non-lethal and lethal removal methods.

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction efforts via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition from intensive to tactical monitoring and removal. Tactical monitoring and removal efforts will occur year round.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is

uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring will continue and it may be necessary to employ several monitoring methods simultaneously in combination. Removal efforts will likely be ground-based and tactical.

LIVE CAPTURE AND TRANSLOCATION

Mountain goats will be captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will work closely with appropriate state wildlife and federal land management agencies or other approved recipients to plan and execute the translocations. Recipients will generally be responsible for transport and associated costs to move mountain goats from frontcountry staging areas within the park to release sites outside of the park. Mountain goats could be captured over the course of 3−5 years, with most activity occurring within the first 1−2 years. Capture operations will occur between December and March. Captured mountain goats will be transported by helicopter to frontcountry staging areas, where they will be transferred to approved recipients. Capture and translocation is projected to involve approximately 32% of the 125 mountain goats. However, the number of mountain goats captured and translocated could be more or less, depending on capture success and the interest from outside entities to receive mountain goats and their ability to cover transport, disease testing, and associated expenses.

Live capture operations will occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats will be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath the helicopter in a transport bag to a frontcountry staging area. NPS personnel will coordinate with Wyoming Game and Fish Department (WGFD) personnel and others to facilitate the transfer of mountain goats to recipients. Recipients will be responsible for acquiring transport or other permits as necessary. In accordance with standard operating procedures, NPS Management Policies, the Animal Welfare Act, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the American Veterinary Medical Association (AVMA). After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park. Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.

When translocation and lethal removal activities occur in the same management period, live capture and translocation activities will generally occur prior to lethal removal. This order of actions is desirable because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and a significant portion of the population is in terrain where capture can be achieved safely. As the removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. As capture operations progress, the goats are likely to shift their distribution to areas of rougher terrain where safe capture is difficult. If capture efficiency exceeds typical effort for capturing goats (2014−2016 =

2.5 hours/goat), helicopter-supported translocation operations will cease, and shift to lethal removal techniques.

LETHAL REMOVAL

Aerial-based lethal removal will be performed by federal personnel or contractors with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Mountain goats will be removed using firearms with non-lead ammunition from aerial- or the ground-based efforts. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats will be captured and euthanized. Aerial capture techniques will include darting or net-gunning from a helicopter. Ground-capture techniques will include ground darting or baiting goats to a drop net, clover trap, or snare. Aerially-captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot). Those captured using ground techniques will be dispatched on site. Animals will be dispatched by trained personnel following established and approved guidelines from the AVMA.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will also be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with the NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals

Operations Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially-based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

USE OF QUALIFIED VOLUNTEERS

The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

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CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

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TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved, but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures.

MOUNTAIN GOAT MONITORING

Monitoring activities will include temporary capture (helicopter based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, as well as possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards the natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During the aerial survey, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following established and approved capture and handling protocols. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries and baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. For example, given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter. Capture with transport will involve two backcountry landings per animal–one to pick the animal up and one to return it to its capture location.

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EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

NPS wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

ESTIMATED COSTS OF IMPLEMENTATION

Based on the current mountain goat population estimate within the park (approx. 125 individuals), the estimated costs, in 2019 dollars, to implement the following phases of alternative C, as described on pages 2–3, are approximately $440,000 for the population reduction phase (68% lethal aerial removal, 16% lethal ground removal, and 16% translocation; years 1–5), approximately $64,000 for the post-reduction phase (years 6–7), and $21,000 annually for the maintenance phase (year 7 and beyond).

Rationale

Commented [h5]: Can you change this heading in some way so it doesn't look like a subheading under Estimated Costs of Implementation? Or perhaps you could relocate this entire section to before the alternative description so it stands out more.

Alternative C with modifications was selected because it best meets the purpose to:

- Aid in the conservation of a native population of Rocky Mountain bighorn sheep located within the park and
- Protect other park resources and values from the rapidly growing non-native mountain goat population.

The EA sufficiently addressed impacts to park resources resulting from ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. The EA was made available for public review and comment during a 30-day period from December 4–20, 2018 and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018 via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have "no potential to cause effect" on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park's determination via email response on April 9, 2018.

~~The park obtained a current species listed (dated June 29, 2019) from the Information Planning and Conservation (IPaC) website.~~ In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on this EA on July 8, 2019 and the Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS's understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park's "may affect, not likely to adversely affect" determination for federally listed species and designated critical habitat. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

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A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018 to solicit comments and concerns. Park leadership met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018 to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and

feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D'Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during the implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

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Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identified 10 criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the criteria.

The following impact topics were dismissed in the EA because they were found to have no potential for significant impacts: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils, whitebark pine, and wilderness character; however, no potential for significant adverse impacts was identified.

Implementing the selected alternative will have short-term disruptions (several minutes to hours) of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat~~. Overall, the effects are expected to be beneficial,~~ and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased, though not as rapidly when utilizing only lethal removal techniques. Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less

adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≥20 years. The selected alternative will have a negative effect on the **untrammeled quality** of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the **undeveloped quality** of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. The selected alternative will have a positive effect on the **natural quality** of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses will likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the **solitude or primitive and unconfined recreation quality** of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character (collectively the wilderness qualities described above) would be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact would diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

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CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

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ERRATA

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods. This revision does not change the effect of the analysis.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≥20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact would diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA:

Stafl, N. and M. I. O'Connor. 2015. American Pikas' (*Ochotona princeps*) Foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

Commented [h10]: Add text changes about skilled volunteers and donation and use of carcasses.

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Commented [h12]: This seems to conflict with statement at line 484.

Commented [h13]: How does this mesh with the statements at line 484 and line 491? At those lines, we seem to be saying impacts would last a long time, but here we're saying they'd be short-term. I think this just needs a little editing to make the point clearer.

Commented [h14]: How does this mesh with statements at line 484 and line 491? At those lines, we seem to be saying impacts would last a long time, but here we're saying they'd be 1-5 years. I think this just needs a little editing to make the point clearer.

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RESPONSE TO SUBSTANTIVE PUBLIC COMMENTS

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Response to public comments addresses substantive comments that were received during the public review period. Many comments addressed issues already adequately covered in the EA. Other comments addressed include mountain goat translocation, the use of qualified volunteers, mountain goat carcasses, and bighorn sheep management.

Several comments proposed the reconsideration of alternatives that were considered but dismissed. After receiving considerable public feedback, the preferred alternative was modified to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities. No changes were made in the assessment of environmental consequences.

The park only responded to substantive public comments; those comments and responses are provided below.

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in Campfires in the Canadian Rockies by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region. Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population. The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to "evaluate the species' current or potential impact on park resources." As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, and has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range, NPS policy is clear on the management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Commented [h16]: This seems to conflict with the information at line 663 and line 866, but I'm not sure. That is, here we say "likely connection" but in line 663 we say "migration between the two populations is likely low" and in line 866 we say "preliminary results…did not detect recent gene flow…" I may just be misunderstanding the information and none of this conflicts, but please double-check.

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive

for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (of which is stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

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ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Because wolverine are a proposed species and not formally listed for protection under the ESA, the USFWS will not evaluate the park's assessment of the potential impacts to this species. However, on page 24 of the mountain goat management plan/EA, specific conservation measures are listed and aimed at reducing potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats.

Alternative C

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors would attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) whenever possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother. Placing adult mountain goats in zoos is not being considered.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS is actively evaluating options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after the recent efforts (2018–19) in Olympic National Park, as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. A tiered system of removals could unnecessarily extend time required to remove mountain goats from the Teton Range, thus was not incorporated into the use of qualified volunteers

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative.

Commented [h17]: What were these suggested modifications and are they addressed elsewhere in the response to comments (if so, please identify where; if not, please provide a response).

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

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CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: The NPS plans to use firearms silencers whenever feasible, which would most likely include ground-based removals when visitors may be impacted by sounds of gunfire (e.g., uncommon removal of a goat during summer).

Commented [h18]: Was this stated in the EA? If not, I recommend adding it via the Errata; if so, I recommend noting which page.

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

Mitigation is an integral part of the environmental planning process that involves identifying measures to reduce, minimize, or correct impacts from the proposed action. In the plan the NPS has referred to mitigation measures as conservation measures. These measures or actions are intended to reduce the potential for adverse impacts on individual bighorn sheep and the population as a whole.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. This dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would ~~be needed~~need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting, while the other NPS units generally allow hunting. Qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave national parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park and Grand Canyon National Park have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. Several National Battlefields and Historic Sites utilize professional sharpshooters to remove white-tailed deer. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates.

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified (see page 5). The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

Commented [h19]: Reiterate or reference explanation in FONSI about why this change was made.

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Commented [h20]: I think this still needs to be addressed (or maybe I didn't understand the response well enough?).

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by the nativity (or non-nativity) of the mountain goat population(s) in question. In areas where mountain goats and bighorn sheep are naturally sympatric, both species may indeed coexist with expected "natural" population fluctuations because competitive overlap is limited by partitioning of habitats (niche). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goats populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

Commented [h21]: Is there a way to rewrite this in more layman's terms?

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on wildlife consumption of native high-elevation plants, vegetation community descriptions, mountain goat wallowing, and effects on soils and plants from the use of salt licks.

Response 30: The commenter correctly pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both ~~Mountain~~ mountain goats and ~~Bighorn~~ bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep. The commenter also pointed out typos, caused by auto-correct, in scientific names of some native plants, and a different opinion on which forbs would be considered "tall" and commented on the degree of analysis of the effects of salt licks. While these final three comments are all valid, the adjustments suggested by the commenter, if made, would not change the impact analysis.

Commented [h22]: What was the comment? Please clarify so that you can respond to it here.

Commented [h23]: If this is the case, why were the corrections not made to the EA in the Errata?

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental

Commented [h24]: Is "rapid" the right word given that this project was started (scoping) in 2013?

organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, then a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (See Response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would

continue to negatively impact park resources and values, including bighorn sheep and wilderness character.

Hunting outside the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their shift in management philosophy on management of mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Costs/Funding

Comment 38: Several commenters inquired as to the cost to implement each alternative and the sources of funding for each. One commenter was particularly interested in costs associated with live-capture of mountain goats to and transporting them to frontcountry processing sites.

Commented [h25]: Edit needed?

Response 38: For Alternative A (no action), estimated costs to capture and monitor at least 10 goats/year the park would be approximately $8,500/goat (capture = $6,000/goat and GPS radio

collar = $2,500/collar), at least $2,000 of fixed wing time annually to aerially monitor goats in the summer, as well as approximately $10,000 in administrative costs at annual estimated cost of $97,000 for as long as park could commit to an effective monitoring program. For Alternative B (lethal control), estimated costs to lethally remove all goats would be approximately $300/goat (including carcass removal of half the goats killed), $22,000 of fixed wing time to assist and monitor removal efforts, as well as approximately $10,000 in administrative costs at an estimated cost of $66,000 for the first year of implementation with approximately 90% of population removed. For implementation of Alternative C, please see the "Estimated Costs of Implementation" section on page 7.

Other mountain goat populations

Comment 39: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 39: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 40: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 40: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

The Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was not referenced in the mountain goat management plan/EA because the NPS plan did not propose

any actions related to the interaction of these two species. This group and the recommendations outlined in the plan focus on issues of concern related to interactions between bighorn sheep and domestic sheep.

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APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archaeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the Cultural Resources Program Manager for record keeping purposes and to pursue archaeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archaeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park archaeologist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources. See Cultural Resources mitigation measures for additional requirements.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored throughout the season and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.

- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.

- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)
- Volunteers will ensure carcass or gut piles are >100 yards from trails, campsites, camping zones, cabins, etc. If this is not practical, skilled volunteers will report the location of any remains to NPS so a temporary closure can be implemented.

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Appendix B: NON-IMPAIRMENT DETERMINATION

Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in

relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in the number of predators and scavengers for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep such a response if not anticipated for several reasons. Scavenger and predator populations typically increase via immigration (individuals moving into an area) or demographically (food surplus leading to improved condition of adults, larger litters, and higher survival of offspring). In mid-winter, the

wolverine is the species most likely to be present in the high elevations of the project area where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because mountain goats and bighorn sheep currently occur in spatially distinct areas and the availability of carrion may divert predation away from live prey. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

~~Though mountain goat removal activities under the selected alternative will result in short-term adverse impacts from disturbance and displacement, bighorn sheep at the population level will not be adversely impacted. Therefore, it has been determined that the selected alternative will not result in an impairment to bighorn sheep.~~

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Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

~~Though mountain goat removal activities will result in short-term adverse impacts from disturbance to vegetation and soils in discrete areas of the park, the selected alternative will not result in an impairment on vegetation and soils.~~

Wilderness Character

Under the selected alternative, field activities that involve the removal of mountain goats will likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats will continue for a period of 20 or more years. These removal activities will have a negative effect on the untrammeled quality of wilderness. There will be a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. There will be a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. There will be a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other

field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character (collectively the wilderness qualities described above) will be mostly impacted during the fall and winter months when mountain goat removal and monitoring activities occur. However, this short-term impact will diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

Commented [h27]: Revise per recommended changes to wilderness section in FONSI and Errata.

~~Though mountain goat removal activities will result in adverse impacts on the untrammeled, undeveloped and solitude or primitive and unconfined recreation qualities of wilderness, the selected alternative will not result in an impairment on wilderness character.~~

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that these resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. ~~As guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the superintendent's professional judgment that implementation of the selected alternative will not constitute impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. This conclusion is based on consideration of the park's purpose and significance, a thorough analysis of the environmental impacts described in the EA, comments provided by the public and others, and the professional judgment of the decision maker guided by the direction of NPS Management Policies (2006).~~

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Fwd_ Mountain Goat Management Plan FONSI Solici....pdf

From:	Gopaul Noojibail
To:	Daniel Noon
Subject:	Fwd: Mountain Goat Management Plan FONSI Solicitor Review Request Status
Date:	Friday, August 16, 2019 2:01:17 PM
Attachments:	ATT00001.htm Draft Mountain Goat Management Plan EA FONSI (2019_08_08) SOL Comments CONFIDENTIAL.docx

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Pls let me know the highlights of thier views.

Gopaul Noojibail
Acting Superintendent
Grand Teton National Park
John D. Rockefeller Memorial Parkway
(307) 739-3411

Begin forwarded message:

> **From:** "Jacobsen, Dana" <dana.jacobsen@sol.doi.gov>
> **Date:** August 16, 2019 at 1:39:36 PM MDT
> **To:** "Noon, Daniel" <daniel_noon@nps.gov>
> **Cc:** Gopaul Noojibail <gopaul_noojibail@nps.gov>, "Niosi, Daniel" <dan_niosi@nps.gov>
> **Subject: Re: Mountain Goat Management Plan FONSI Solicitor Review Request Status**
>
> Hey there!
>
> (b) (5) [redacted]
>
> Dana
>
> On Fri, Aug 16, 2019 at 8:47 AM Noon, Daniel <daniel_noon@nps.gov> wrote:
>
> > Hello Dana,
> >
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> > [redacted]
> >
> > Thank you.
> >
> > Daniel Noon
> > Chief of Planning and Environmental Compliance

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

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Draft Mountain Goat Management Plan EA FONSI _8.pdf

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National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

_____

Gopaul Noojibail Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

_____

[NAME] Date
Regional Director
DOI Unified Region 7 – Upper Colorado Basin

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INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. ~~To the extent necessary, relevant sections of the EA are incorporated by reference below.~~The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) with modifications to include the use of qualified volunteers for certain tasks to rapidly remove non-native mountain goats from the park by live capture, relocation and lethal means, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities.

The selected alternative will implement a management plan to reduce ~~remove~~ non-native mountain goats within ~~from~~ the park using a combination of non-lethal and lethal removal methods.

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction efforts via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after

Commented [JDE1]: Added these changes to clarify that multiple methods of management might be used, and that volunteers are not taking over the entire program, but will only be carrying out specific tasks.

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Latest Revised Draft Mountain Goat Management P....pdf

From: Noon, Daniel
To: Gopaul Noojibail; Susan (Sue) Consolo-Murphy; Denise Germann
Subject: Latest Revised Draft Mountain Goat Management Plan FONSI
Date: Friday, August 16, 2019 4:09:13 PM
Attachments: GRTE Mountain Goat Management Plan Draft Revised FONSI (2019-08-16).docx

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Hello,

Attached is the latest revised draft Mountain Goat Management Plan FONSI. After our discussion, I reviewed (b) (5) [redacted]

(b) (5) [redacted].

My goal is to provide the FONSI to IMR Environmental Quality for one final review early next week (August 19 or 20), superintendent recommendation by mid-week (August 21 or 22), and routing to the regional director for areview and decision on or before Friday (August 23).

Thanks and have a great weekend!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

GRTE Mountain Goat Management Plan Draft Revi.pdf

DRAFT

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director
NPS Intermountain Region

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INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. To the extent necessary, relevant sections of the EA are incorporated by reference below.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) with modifications to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

- The selected alternative will implement a management plan to remove non-native mountain goats from the park using a combination of non-lethal and lethal removal methods. This alternative best meets the purpose to: Aid in the conservation of a native population of bighorn sheep located within the park and
- Protect other park resources and values from the rapidly growing non-native mountain goat population.

The EA sufficiently addressed impacts to park resources resulting from ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to

successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction efforts via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition from intensive to tactical monitoring and removal. Tactical monitoring and removal efforts will occur year round.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring will continue and it may be necessary to employ several monitoring methods simultaneously in combination. Removal efforts will likely be ground-based and tactical.

LIVE CAPTURE AND TRANSLOCATION

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department, and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals, and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Live capture operations will occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats will be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath the helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it

will be dispatched as quickly as possible using established and approved guidelines from the American Veterinary Medical Association (AVMA). After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park. Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.

Mountain goats could be captured and translocated over the course of 3−5 years between December and March, with most activity occurring within the first 1−2 years. Capture and translocation is projected to involve approximately 32% of the 125 mountain goats. However, the number of mountain goats captured and translocated could be more or less, depending on capture success and interest from outside entities.

If translocation and lethal removal activities occur in the same management period, live capture and translocation activities will generally occur prior to lethal removal. This order of actions is desirable because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and a significant portion of the population is in terrain where capture can be achieved safely. As the removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. As capture operations progress, the goats are likely to shift their distribution to areas of rougher terrain where safe capture is difficult. If capture efficiency exceeds typical effort for capturing goats (from 2014 to 2016 the capture efficiency to collar mountain goats was 2.5 hours/goat), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

LETHAL REMOVAL

Aerial-based lethal removal will be performed by federal personnel or contractors with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Mountain goats will be removed using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats will be captured and euthanized. Aerial capture techniques will include darting or net-gunning from a helicopter. Ground-capture techniques will include ground darting or baiting goats to a drop net, clover trap, or snare. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot). Those captured using ground techniques will be dispatched on site. Animals will be dispatched by trained personnel following established and approved guidelines from the AVMA.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig.

1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will also be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with the NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

USE OF QUALIFIED VOLUNTEERS

The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian

Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved, but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures.

MOUNTAIN GOAT MONITORING

Monitoring activities will include temporary capture (helicopter-based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, and possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During the aerial survey, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following established and approved capture and handling protocols. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries and baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. For example, given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter. Capture with transport will involve two backcountry landings per animal–one to pick the animal up and one to return it to its capture location.

EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

NPS wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

ESTIMATED COSTS OF IMPLEMENTATION

Based on the current mountain goat population estimate within the park (approx. 125 individuals), the estimated costs, in 2019 dollars, to implement the following phases of alternative C, as described on pages 2–3, are approximately $440,000 for the population reduction phase (68% lethal aerial removal, 16% lethal ground removal, and 16% translocation;

years 1–5), approximately $64,000 for the post-reduction phase (years 6–7), and $21,000 annually for the maintenance phase (year 7 and beyond).

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day period from December 4–20, 2018, and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on this EA on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leadership met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian

Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during the implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identified 10 criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the criteria.

The following impact topics were dismissed in the EA because they were found to have no potential for significant impacts: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils, whitebark pine, and wilderness character; however, no potential for significant adverse impacts was identified.

Implementing the selected alternative may cause short-term disruptions (several minutes to hours) of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased, though not as rapidly when utilizing only lethal removal techniques. Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses will likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly impacted during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. However, this impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

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ERRATA

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section:

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following text is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA (page 22):

4. **Qualified Volunteers:** The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods. This revision does not change the effect of the analysis.

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The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American Pikas' (*Ochotona princeps*) Foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

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RESPONSE TO SUBSTANTIVE PUBLIC COMMENTS

Response to public comments addresses substantive comments that were received during the public review period. Many comments addressed issues already adequately covered in the EA. Other comments addressed include mountain goat translocation, the use of qualified volunteers, mountain goat carcasses, and bighorn sheep management.

Several comments proposed the reconsideration of alternatives that were considered but dismissed. After receiving considerable public feedback, the preferred alternative was modified to include the use of qualified volunteers to rapidly remove non-native mountain goats from the park and allow for the donation and distribution of mountain goat meat that result from lethal removal activities. No changes were made in the assessment of environmental consequences.

The park only responded to substantive public comments; those comments and responses are provided below.

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in Campfires in the Canadian Rockies by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region. Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population. The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to "evaluate the species' current or potential impact on park resources." As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, and has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range, NPS policy is clear on the management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

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Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive

for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (of which is stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

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ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Because wolverine are a proposed species and not formally listed for protection under the ESA, the USFWS will not evaluate the park's assessment of the potential impacts to this species. However, on page 24 of the mountain goat management plan/EA, specific conservation measures are listed and aimed at reducing potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors would attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) whenever possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother. Placing adult mountain goats in zoos is not being considered.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS is actively evaluating options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after the recent efforts (2018–19) in Olympic National Park, as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. A tiered system of removals could unnecessarily extend time required to remove mountain goats from the Teton Range, thus was not incorporated into the use of qualified volunteers

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation and agency removals in select situations of known, suspected or likely contact between mountain goats and bighorn sheep (See Comments/Responses 15 and 26).

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

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CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

Mitigation is an integral part of the environmental planning process that involves identifying measures to reduce, minimize, or correct impacts from the proposed action. In the plan the NPS has referred to mitigation measures as conservation measures. These measures or actions are intended to reduce the potential for adverse impacts on individual bighorn sheep and the population as a whole.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or

- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. This dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. Qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave national parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified (see page 5). The use of qualified volunteers has been added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The

program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment “in such a manner and by such means as will leave them unimpaired” for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species’ partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017),

with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on wildlife consumption of native high-elevation plants, vegetation community descriptions, mountain goat wallowing, and effects on soils and plants from the use of salt licks.

Response 30: The commenter correctly pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep. The commenter also pointed out typos, caused by auto-correct, in scientific names of some native plants, and a different opinion on which forbs would be considered "tall" and commented on the degree of analysis of the effects of salt licks. While these final three comments are all valid, the adjustments suggested by the commenter, if made, would not change the impact analysis.

Commented [h1]: What was the comment? Please clarify so that you can respond to it here.

Commented [ND2R1]: Kelly: let's discuss the comment and response.

Commented [h3]: If this is the case, why were the corrections not made to the EA in the Errata?

Commented [ND4R3]: Kelly: let's discuss the comment and response.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and

John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, then a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (See Response 35).

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Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their shift in management philosophy on management of mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Costs/Funding

Comment 38: Several commenters inquired as to the cost to implement each alternative and the sources of funding for each. One commenter was particularly interested in costs associated with live-capture of mountain goats and transporting them to frontcountry processing sites.

Response 38: For Alternative A (no action), estimated costs to capture and monitor at least 10 goats/year the park would be approximately $8,500/goat (capture = $6,000/goat and GPS radio collar = $2,500/collar), at least $2,000 of fixed wing time annually to aerially monitor goats in the summer, as well as approximately $10,000 in administrative costs at annual estimated cost of $97,000 for as long as park could commit to an effective monitoring program. For Alternative B (lethal control), estimated costs to lethally remove all goats would be approximately $300/goat (including carcass removal of half the goats killed), $22,000 of fixed wing time to assist and monitor removal efforts, as well as approximately $10,000 in administrative costs at an estimated cost of $66,000 for the first year of implementation with approximately 90% of population removed. For implementation of Alternative C, please see the “Estimated Costs of Implementation” section on page 7.

Other mountain goat populations

Comment 39: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 39: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 40: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 40: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

The Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was not referenced in the mountain goat management plan/EA because the NPS plan did not propose any actions related to the interaction of these two species. This group and the recommendations outlined in the plan focus on issues of concern related to interactions between bighorn sheep and domestic sheep.

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APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park archeologist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

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SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources. See Cultural Resources mitigation measures for additional requirements.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored throughout the season and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.

- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.

- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)
- Volunteers will ensure carcass or gut piles are >100 yards from trails, campsites, camping zones, cabins, etc. If this is not practical, skilled volunteers will report the location of any remains to NPS so a temporary closure can be implemented.

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Appendix B: NON-IMPAIRMENT DETERMINATION

Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in

relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in the number of predators and scavengers for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep such a response if not anticipated for several reasons. Scavenger and predator populations typically increase via immigration (individuals moving into an area) or demographically (food surplus leading to improved condition of adults, larger litters, and higher survival of offspring). In mid-winter, the

wolverine is the species most likely to be present in the high elevations of the project area where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because mountain goats and bighorn sheep currently occur in spatially distinct areas and the availability of carrion may divert predation away from live prey. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses will likely be utilized as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly impacted during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. However, this impact on wilderness character will diminish as the mountain

goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that these resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

IF we can discuss the FONSI again today it woul....pdf

From:	Noojibail, Gopaul
To:	Susan (Sue) Consolo-Murphy; Noon, Daniel
Cc:	Katie Tozier
Subject:	IF we can discuss the FONSI again today it would be great. There are several areas in here where I was surprised by the contentTHanks.
Date:	Monday, August 19, 2019 10:49:12 AM
Attachments:	GRTE Mountain Goat Management Plan Draft Revised FONSI (2019-08-16)GPN.docx

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Gopaul Noojibail
Acting Superintendent
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
307.739.3411

GRTE Mountain Goat Management Plan Draft Revi_1.pdf

DRAFT

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director
NPS Intermountain Region

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INTRODUCTION

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APPENDIX A: MITIGATION MEASURES

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Re_ IF we can discuss the FONSI again today it ....pdf

From:	Consolo-Murphy, Susan (Sue)
To:	Noon, Daniel
Cc:	Noojibail, Gopaul
Subject:	Re: IF we can discuss the FONSI again today it would be great. There are several areas in here where I was surprised by the contentTHanks.
Date:	Tuesday, August 20, 2019 12:11:55 PM
Attachments:	GRTE Mountain Goat Management Plan Draft Revised FONSI (2019-08-16)GPN.scm responsedocx.docx

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My comments in response to both your requests to review since Friday.

Sue Consolo-Murphy
Chief, Science & Resource Management
Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
P.O. Drawer 170
Moose, WY 83012
(307) 739-3481 (w)
(307) 690-8005 (cell)
Sue_Consolo-murphy@nps.gov

On Mon, Aug 19, 2019 at 10:49 AM Noojibail, Gopaul <gopaul_noojibail@nps.gov> wrote:

> Gopaul Noojibail
> Acting Superintendent
> Grand Teton National Park
> John D. Rockefeller, Jr. Memorial Parkway
> 307.739.3411

GRTE Mountain Goat Management Plan Draft Revi_2.pdf

DRAFT

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director
NPS Intermountain Region

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with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on wildlife consumption of native high-elevation plants, vegetation community descriptions, mountain goat wallowing, and effects on soils and plants from the use of salt licks.

Response 30: The commenter correctly pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep. The commenter also pointed out typos, caused by auto-correct, in scientific names of some native plants, and a different opinion on which forbs would be considered "tall" and commented on the degree of analysis of the effects of salt licks. While these final three comments are all valid, the adjustments suggested by the commenter, if made, would not change the impact analysis.

Commented [h23]: What was the comment? Please clarify so that you can respond to it here.

Commented [ND24R23]: Kelly: let's discuss the comment and response.

Commented [h25]: If this is the case, why were the corrections not made to the EA in the Errata?

Commented [ND26R25]: Kelly: let's discuss the comment and response.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of

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Re_ Use of Volunteers for Wildlife Management i....pdf

From:	Consolo-Murphy, Susan (Sue)
To:	Noojibail, Gopaul
Cc:	Noon, Daniel; Victoria Mates
Subject:	Re: Use of Volunteers for Wildlife Management in Parks
Date:	Wednesday, August 21, 2019 8:43:38 AM
Attachments:	Wildlife Population Reduction in Parks - Sheet1.pdf

Done, see attached.

Sue Consolo-Murphy
Chief, Science & Resource Management
Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
P.O. Drawer 170
Moose, WY 83012
(307) 739-3481 (w)
(307) 690-8005 (cell)
Sue_Consolo-murphy@nps.gov

On Mon, Aug 19, 2019 at 8:20 AM Noojibail, Gopaul <gopaul_noojibail@nps.gov> wrote:

Sue - Please complete the form for us.

Gopaul Noojibail
Acting Superintendent
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
307.739.3411

---------- Forwarded message ---------
From: **IMR Regional Director, NPS** <imr_regional_director@nps.gov>
Date: Fri, Aug 16, 2019 at 11:15 AM
Subject: Use of Volunteers for Wildlife Management in Parks
To: <imr_superintendents@nps.gov>, NPS IMR Park Resource Chiefs <imr_park_resource_chiefs@nps.gov>
Cc: Amy Cole <amy_k_cole@nps.gov>, Patrick_Malone@nps.gov <Patrick_Malone@nps.gov>

MEMORANDUM

To:	IMR Superintendents
Attention:	IMR Resource Chiefs
From:	Acting Regional Director /s/

Subject:	Use of Volunteers for Wildlife Management in Parks
Memo Type:	Action Required
Due Date(s):	September 30, 2019
Contact:	John A. Mack, 303-969-2929, john_mack@nps.gov

Action Requested
Superintendents are reminded of the authorities to use volunteers in lethal removal of native and non-native wildlife. For those parks that have or are planning on removing wildlife, please use the google spreadsheet to verify and update their respective information.

Reason for Request
Section 2410 of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (2019) reconfirmed the authority of using qualified volunteers in wildlife management.

Negative Replies
Negative replies ARE NOT required.

Next Steps
Where applicable, Park Superintendents are asked to verify and update a WASO google spreadsheet on or before September 30, 2019

Background Information
Attached is the Memorandum from Acting Deputy Director, Operations reaffirming the authority for using skilled volunteers in the lethal removal of wildlife, identifying WASO contacts for questions related to the National Environmental Policy Act process and implementation of wildlife management activities, and requesting Regions to verify and update the spreadsheet regarding planned or on-going lethal removal of wildlife.

Attachments:
1) Use of Volunteers for Wildlife Management in Parks
https://docs.google.com/spreadsheets/d/1BCo0RPXd5TPwWmP5EDod_2McQ5xOBnSTTItO-Yq4628/edit#gid=0

cc:
Amy Cole, Acting Associate Regional Director for Resource Stewardship and Science
Patrick Malone, Regional Chief, Natural Resources Division

Wildlife Population Reduction in Parks - Sheet.pdf

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Fwd_ Draft Mountain Goat Management Plan FONSI ....pdf

From:	Wilson, Margaret
To:	Margaret
Subject:	Fwd: Draft Mountain Goat Management Plan FONSI - DOI Solicitor Review and Revisions
Date:	Thursday, August 22, 2019 8:06:12 AM
Attachments:	Draft Mountain Goat Management Plan EA FONSI (2019_08_08) SOL Comments CONFIDENTIAL (wdn).docx

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---------- Forwarded message ---------
From: **Noon, Daniel** <daniel_noon@nps.gov>
Date: Wed, Aug 21, 2019 at 3:01 PM
Subject: Draft Mountain Goat Management Plan FONSI - DOI Solicitor Review and Revisions
To: Susan (Sue) Consolo-Murphy <sue_consolo-murphy@nps.gov>
Cc: Margaret Wilson <margaret_wilson@nps.gov>

Hi Sue,

Attached are the draft Mountain Goat Management Plan FONSI comments and edits from the DOI solicitors along with my revisions and responses. Please review and forward to your staff for input. If possible, please provide feedback by COB tomorrow, Thursday, August 22. This will give me one day to consolidate your latest revisions (emailed to me Tuesday, August 20) with the revisions to the vegetation comment/response and the attachment. I'll then provide the FONSI to IMR Environmental Quality Division (EQD) on Friday for a final review.

It is highly likely that I'll need to have Margaret follow-up on input from IMR EQD beginning next week while I'm away from the office (returning Monday, September 9) and then route the FONSI to the regional director later next week for a decision in September.

Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

--
Margaret Wilson
Planner
Office of Planning and Compliance
Grand Teton National Park
Phone: (307)739-3390

Draft Mountain Goat Management Plan EA FONSI _9.pdf

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National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

_____

Gopaul Noojibail Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

_____

[NAME] Date
Regional Director
DOI Unified Region 7 – Upper Colorado Basin

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Whittlesey, L. H, P. D. Schullery, S. Bone, A. Klein, P. J. White, A. W. Rodman, and D. E. Hallac. 2018. Using historical accounts (1796–1881) to inform contemporary wildlife management in the Yellowstone area. Natural Areas Journal 38: 99–106

Williams, J.S. 1999. Compensatory reproduction and dispersal in an introduced mountain goat population in central Montana. Wildlife Society Bulletin 27: 1019–1024.

Wolff, P. L., M. Cox, C. McAdoo, and C. Anderson. 2016. Disease transmission between sympatric mountain goats and bighorn sheep. Biennial Conference of the Northern Wild Sheep and Goat Council. 20: 79.l

Wolff, P.L., J.A. Blanchong, D.D. Nelson, P.J. Plummer, C. McAdoo, M. Cox, T.E. Besser, J. Muñoz-Gutiérrez, and C.A. Anderson. 2019. Detection of *Mycoplasma ovipneumoniae* in pneumonic mountain goat (*Oreamnos americanus*) Kids. Journal of Wildlife Diseases 55: 206–212.

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Appendix B: NON-IMPAIRMENT DETERMINATION

Mountain Goat Management Plan

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Re_ Draft Mountain Goat Management Plan FONSI -....pdf

From: Consolo-Murphy, Susan (Sue)
To: Noon, Daniel; Sarah Dewey
Subject: Re: Draft Mountain Goat Management Plan FONSI - DOI Solicitor Review and Revisions
Date: Thursday, August 22, 2019 9:51:25 AM
Attachments: Draft Mountain Goat Management Plan EA FONSI (2019_08_08) SOL Comments CONFIDENTIAL (wdn plus scm).docx

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Two things here:

- Sarah, please look at my responses to comments and correct/augment if you wish. There are 3 I couldn't fully respond to and ask you to focus on those:

1. Pg. 14, request for 'citation' on Wyoming's acceptance of these goats as nonnative
2. Pg. 19, comment #12, on why we wouldn't let adult goats go to zoos if someone wanted them
3. Pg. 26, response #24, on sheep translocations (I really don't want us to have to respond much to that idea, but believe there's some literature on sheep doing/not doing well in translocation, so perhaps you can cite?)

- Daniel, (b) (5) [redacted]

Sue Consolo-Murphy
Chief, Science & Resource Management
Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
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Moose, WY 83012
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(307) 690-8005 (cell)
Sue_Consolo-murphy@nps.gov

On Wed, Aug 21, 2019 at 3:13 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

> Sue,
>
> One more item: how did you want (b) (5) [redacted]

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Wed, Aug 21, 2019 at 3:01 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

Hi Sue,

Attached are the draft Mountain Goat Management Plan FONSI comments and edits from the DOI solicitors along with my revisions and responses. Please review and forward to your staff for input. If possible, please provide feedback by COB tomorrow, Thursday, August 22. This will give me one day to consolidate your latest revisions (emailed to me Tuesday, August 20) with the revisions to the vegetation comment/response and the attachment. I'll then provide the FONSI to IMR Environmental Quality Division (EQD) on Friday for a final review.

It is highly likely that I'll need to have Margaret follow-up on input from IMR EQD beginning next week while I'm away from the office (returning Monday, September 9) and then route the FONSI to the regional director later next week for a decision in September.

Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

Draft Mountain Goat Management Plan EA FONSI _10.pdf

DRAFT

[redacted]

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

_____

Gopaul Noojibail Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

_____

[NAME] Date
Regional Director
DOI Unified Region 7 – Upper Colorado Basin

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Re_ Mountain Goat Management Plan FONSI Solicit...(2).pdf

From:	Noon, Daniel
To:	Gopaul Noojibail
Subject:	Re: Mountain Goat Management Plan FONSI Solicitor Review Request Status
Date:	Friday, August 23, 2019 2:00:00 PM
Attachments:	Draft Mountain Goat Management Plan EA FONSI (2019_08_08) SOL Comments CONFIDENTIAL (wdn plus scm plus srd).docx Draft Mountain Goat Management Plan EA FONSI (2019_08_08) SOL Comments CONFIDENTIAL (wdn plus scm plus srd).docx

---

Gopaul,

The comments provided by the DOI solicitors were (b) (5) [redacted]

(b) (5) [redacted]

If you have any questions or issues, please contact Margaret, Denise, and/or Sue while I'm away.

Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Fri, Aug 16, 2019 at 2:01 PM Gopaul Noojibail <gopaul_noojibail@nps.gov> wrote:

> Pls let me know the highlights of thier views.
>
> Gopaul Noojibail
> Acting Superintendent

Grand Teton National Park
John D. Rockefeller Memorial Parkway
(307) 739-3411

Begin forwarded message:

From: "Jacobsen, Dana" <dana.jacobsen@sol.doi.gov>
Date: August 16, 2019 at 1:39:36 PM MDT
To: "Noon, Daniel" <daniel_noon@nps.gov>
Cc: Gopaul Noojibail <gopaul_noojibail@nps.gov>, "Niosi, Daniel" <dan_niosi@nps.gov>
Subject: Re: Mountain Goat Management Plan FONSI Solicitor Review Request Status

(b) (5) [redacted]

Dana

On Fri, Aug 16, 2019 at 8:47 AM Noon, Daniel <daniel_noon@nps.gov> wrote:

> Hello Dana,
>
> (b) (5) [redacted]
>
> [redacted]
>
> Thank you.
>
> Daniel Noon
> Chief of Planning and Environmental Compliance
> Grand Teton National Park
> John D. Rockefeller, Jr. Memorial Parkway
> (307) 739-3465
> Email: daniel_noon@nps.gov

--
Dana Jacobsen
Assistant Regional Solicitor, Parks and Wildlife

Office of the Solicitor
755 Parfet, Suite 151
Lakewood, CO 80215
(303) 445-0639
Dana.Jacobsen@sol.doi.gov

Draft Mountain Goat Management Plan EA FONSI _12.pdf

DRAFT

[redacted]

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

_____

Gopaul Noojibail Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

_____

[NAME] Date
Regional Director
DOI Unified Region 7 – Upper Colorado Basin

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Draft Mountain Goat Management Plan EA FONSI _14.pdf

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National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

_____

Gopaul Noojibail Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

_____

[NAME] Date
Regional Director
DOI Unified Region 7 – Upper Colorado Basin

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Re_ Mountain Goat Management Plan FONSI Solicit...(1).pdf

From: Noon, Daniel
To: Gopaul Noojibail
Subject: Re: Mountain Goat Management Plan FONSI Solicitor Review Request Status
Date: Friday, August 23, 2019 2:06:48 PM
Attachments: GRTE Mountain Goat Management Plan Draft Revised FONSI (2019-08-23).docx

---

Gopaul,

Here is the latest revised draft FONSI.

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Fri, Aug 23, 2019 at 1:59 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

> Gopaul,
>
> The comments provided by the DOI solicitors (b) (5) [redacted]
>
> (b) (5) [redacted]
>
> If you have any questions or issues, please contact Margaret, Denise, and/or Sue while I'm away.
>
> Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Fri, Aug 16, 2019 at 2:01 PM Gopaul Noojibail <gopaul_noojibail@nps.gov> wrote:

Pls let me know the highlights of thier views.

Gopaul Noojibail
Acting Superintendent
Grand Teton National Park
John D. Rockefeller Memorial Parkway
(307) 739-3411

Begin forwarded message:

From: "Jacobsen, Dana" <dana.jacobsen@sol.doi.gov>
Date: August 16, 2019 at 1:39:36 PM MDT
To: "Noon, Daniel" <daniel_noon@nps.gov>
Cc: Gopaul Noojibail <gopaul_noojibail@nps.gov>, "Niosi, Daniel" <dan_niosi@nps.gov>
Subject: Re: Mountain Goat Management Plan FONSI Solicitor Review Request Status

Hey there!

(b) (5) [redacted].

Dana

On Fri, Aug 16, 2019 at 8:47 AM Noon, Daniel <daniel_noon@nps.gov> wrote:

Hello Dana,

(b) (5) [redacted]

[redacted]

Thank you.

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

--
Dana Jacobsen
Assistant Regional Solicitor, Parks and Wildlife
Office of the Solicitor
755 Parfet, Suite 151
Lakewood, CO 80215
(303) 445-0639
Dana.Jacobsen@sol.doi.gov

GRTE Mountain Goat Management Plan Draft Revi_3.pdf

DRAFT

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director
NPS Intermountain Region

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APPENDIX A: MITIGATION MEASURES

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Re_ Mountain Goat Management Plan FONSI Solicit....pdf

From:	Noon, Daniel
To:	Jacobsen, Dana
Cc:	Gopaul Noojibail; Niosi, Daniel; Heather Rice; Margaret Wilson
Subject:	Re: Mountain Goat Management Plan FONSI Solicitor Review Request Status
Date:	Friday, August 23, 2019 2:07:08 PM
Attachments:	Draft Mountain Goat Management Plan EA FONSI (2019_08_08) SOL Comments CONFIDENTIAL (wdn plus scm plus srd).docx GRTE Mountain Goat Management Plan Draft Revised FONSI (2019-08-23).docx

---

Hello Dana,

(b) (5) [redacted]

I'll be away from the office beginning tomorrow; returning Monday, September 9 If you have any questions regarding our responses and revisions, please contact Margaret Wilson (margaret_wilson@nps.gov; 307-739-3390).

Thank you and have a great weekend.

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Fri, Aug 16, 2019 at 1:39 PM Jacobsen, Dana <dana.jacobsen@sol.doi.gov> wrote:

> Hey there!
>
> (b) (5) [redacted]
>
> Dana
>
> On Fri, Aug 16, 2019 at 8:47 AM Noon, Daniel <daniel_noon@nps.gov> wrote:
>
> > Hello Dana,
> >
> > (b) (5) [redacted]
> >
> > [redacted]
> >
> > Thank you.

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

--
Dana Jacobsen
Assistant Regional Solicitor, Parks and Wildlife
Office of the Solicitor
755 Parfet, Suite 151
Lakewood, CO 80215
(303) 445-0639
Dana.Jacobsen@sol.doi.gov

Draft Mountain Goat Management Plan EA FONSI _16.pdf

DRAFT

[redacted]

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

_____

Gopaul Noojibail Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

_____

[NAME] Date
Regional Director
DOI Unified Region 7 – Upper Colorado Basin

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Fwd_ GRTE Revised Draft Mountain Goat Managemen...(3).pdf

From:	Rice, Heather
To:	Margaret
Cc:	Daniel
Subject:	Fwd: GRTE Revised Draft Mountain Goat Management Plan FONSI Review Request (PEPC 47959)
Date:	Wednesday, August 28, 2019 10:19:37 AM
Attachments:	GRTE Mountain Goat Management Plan Draft Revised FONSI (2019_08_23) IMR Rice 8-28-19.docx

---

Hi Margaret,

I've finished my review of the revised FONSI et al and have attached my comments here. I don't have many (some are just changes in wording and some additions I should have caught before). Do you have time for a phone call to go over them? I'm here today until 3:30 and here most of the day on Friday. Thanks! Once we've talked, I'll post these on PEPC.

Heather
****

Heather Rice
NEPA Specialist, Environmental Quality Division
Intermountain Region, National Park Service
12795 West Alameda Parkway | Denver, CO 80228
303-969-2975 office | 303-969-2717 fax
heather_rice@nps.gov | IMR-EQ Sharepoint Site

Have you seen the 2015 NPS NEPA Handbook??
Click here to check it out!

Plato on NEPA: "The beginning is the most important part of the work."

---------- Forwarded message ---------
From: **Noon, Daniel** <daniel_noon@nps.gov>
Date: Fri, Aug 23, 2019 at 1:25 PM
Subject: GRTE Revised Draft Mountain Goat Management Plan FONSI Review Request (PEPC 47959)
To: Heather Rice <heather_rice@nps.gov>
Cc: Dan Niosi <dan_niosi@nps.gov>, Richard (Joe) Neubauer <joe_neubauer@nps.gov>, Nida Shaheen <nida_holliday@nps.gov>, Susan (Sue) Consolo-Murphy <sue_consolo-murphy@nps.gov>, Margaret Wilson <margaret_wilson@nps.gov>

Hello Heather,

I placed the the park's revised draft Mountain Goat Management Plan FONSI in PEPC 47959 for a final review. Also included in PEPC are the three document reviews provided by park you, park management, and the DOI solicitors. I incorporated input from these three versions into the revised draft.

I'll inform the DOI solicitors in a separate email and will provide them the revised draft version along with their version with our responses to comments.

I will be out of the office beginning August 24; returning Monday, September 9. Please

coordinate with Margaret Wilson, who will be acting Chief of Planning and Environmental Compliance during my absence (margaret_wilson@nps.gov, 307-739-3390). When ready, Margaret will route the final FONSI to our superintendent for recommendation and then to IMR EQD for regional director review and decision.

Thanks and have a great couple of weeks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

GRTE Mountain Goat Management Plan Draft Revi_5.pdf

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National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director
NPS Intermountain Region

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INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) with modifications to include the use of qualified volunteers for certain tasks to rapidly remove non-native mountain goats from the park by live capture, relocation and lethal means, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to remove non-native mountain goats within the park using a combination of non-lethal and lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within the parks' wilderness areas.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; (3) the field conditions present to successfully transport

Commented [RHE1]: What will be the impact of this if any?

carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat.

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

LIVE CAPTURE AND TRANSLOCATION

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Live capture operations will occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the

American Veterinary Medical Association (AVMA). After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park. Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.

Mountain goats could be captured and translocated over the course of 3−5 years between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and a significant portion of the population is in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

LETHAL REMOVAL

Mountain goats will be removed using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized. Animals will be dispatched by trained personnel following established and approved guidelines from the AVMA.

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig.

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

USE OF QUALIFIED VOLUNTEERS

The NPS will develop and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Qualified volunteers of the NPS will be limited to ground-based field efforts to safely locate and dispatch goats in accordance with guidelines that will be developed prior to initiation of a qualified volunteer program.

CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

MOUNTAIN GOAT MONITORING

Monitoring activities will include temporary capture (helicopter-based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, and possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following park-specific capture and handling protocols approved by the NPS veterinarian. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to

frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. Given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

NPS wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

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PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

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FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identifies ten criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed ~~in the EA because they were found to have no potential for significant impacts~~from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

Commented [RHE2]: New boilerplate.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

Commented [RHE3]: I added this from the FONSI template to make clear that there would be no significant impacts on these topics.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils, whitebark pine, and wilderness character; however, no potential for significant adverse impacts was identified.

Implementing the selected alternative may cause short-term disruptions (several minutes to hours) of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

Overall, the effects of the selected alternative are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. When the beneficial effects of Alternative C are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed

by this plan, the positive increment expected from Alternative C does not substantially change the overall cumulative impact.

Commented [RHE4]: I added the cumulative impacts summary language from the EA for each of the topics below.

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there ~~would~~ will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing

authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

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APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park archeologist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

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SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources. See Cultural Resources mitigation measures for additional requirements.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored throughout the season and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.

- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.

- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)

Volunteers will ensure carcass or gut piles are >100 yards from trails, campsites, camping zones, cabins, etc. If this is not practical, skilled volunteers will report the location of any remains to NPS so a temporary closure can be implemented.

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APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

DRAFT

The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4)1 is revised by removing a reference to "tall forbs:"

Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

This condition removes vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

DRAFT

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods. T

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

DRAFT

Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

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HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Commented [RHE5]: See my 8/9/19 comment; I'm not sure if Dave or Sarah had a chance to review this yet.

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors could attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) when possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts (2018–19) in Olympic National Park, as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

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ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

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CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave National Parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified (see page 5). The use of qualified volunteers has been added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment “in such a manner and by such means as will leave them unimpaired” for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species’ partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017),

with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants, , impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Commented [RHE6]: I don't see a response to this unless it was meant to be covered by the response about effects of goat and sheep on native vegetation?

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section, and an updated statement about the effects of mountain goat wallows are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be

identified. Because bighorn sheep live in remote, mountainous areas where access is challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (See Response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between

mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a

response is not anticipated. In mid-winter, the wolverine is the species most likely to be present in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon.. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

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Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

Fwd_ GRTE Revised Draft Mountain Goat Managemen...(2).pdf

From:	Wilson, Margaret
To:	Margaret
Subject:	Fwd: GRTE Revised Draft Mountain Goat Management Plan FONSI Review Request (PEPC 47959)
Date:	Thursday, August 29, 2019 5:08:50 PM
Attachments:	GRTE Mountain Goat Management Plan Draft Revised FONSI (2019_08_23) IMR Rice 8-28-19.docx

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---------- Forwarded message ---------
From: **Rice, Heather** <heather_rice@nps.gov>
Date: Wed, Aug 28, 2019 at 10:19 AM
Subject: Fwd: GRTE Revised Draft Mountain Goat Management Plan FONSI Review Request (PEPC 47959)
To: Margaret <margaret_wilson@nps.gov>
Cc: Daniel <daniel_noon@nps.gov>

Hi Margaret,

I've finished my review of the revised FONSI et al and have attached my comments here. I don't have many (some are just changes in wording and some additions I should have caught before). Do you have time for a phone call to go over them? I'm here today until 3:30 and here most of the day on Friday. Thanks! Once we've talked, I'll post these on PEPC.

Heather
****

Heather Rice
NEPA Specialist, Environmental Quality Division
Intermountain Region, National Park Service
12795 West Alameda Parkway | Denver, CO 80228
303-969-2975 office | 303-969-2717 fax
heather_rice@nps.gov | IMR-EQ Sharepoint Site

Have you seen the 2015 NPS NEPA Handbook??
Click here to check it out!

Plato on NEPA: "The beginning is the most important part of the work."

---------- Forwarded message ---------
From: **Noon, Daniel** <daniel_noon@nps.gov>
Date: Fri, Aug 23, 2019 at 1:25 PM
Subject: GRTE Revised Draft Mountain Goat Management Plan FONSI Review Request (PEPC 47959)
To: Heather Rice <heather_rice@nps.gov>
Cc: Dan Niosi <dan_niosi@nps.gov>, Richard (Joe) Neubauer <joe_neubauer@nps.gov>, Nida Shaheen <nida_holliday@nps.gov>, Susan (Sue) Consolo-Murphy <sue_consolo-murphy@nps.gov>, Margaret Wilson <margaret_wilson@nps.gov>

Hello Heather,

I placed the the park's revised draft Mountain Goat Management Plan FONSI in PEPC 47959 for a final review. Also included in PEPC are the three document reviews provided by park you, park management, and the DOI solicitors. I incorporated input from these three versions into the revised draft.

I'll inform the DOI solicitors in a separate email and will provide them the revised draft version along with their version with our responses to comments.

I will be out of the office beginning August 24; returning Monday, September 9. Please coordinate with Margaret Wilson, who will be acting Chief of Planning and Environmental Compliance during my absence (margaret_wilson@nps.gov, 307-739-3390). When ready, Margaret will route the final FONSI to our superintendent for recommendation and then to IMR EQD for regional director review and decision.

Thanks and have a great couple of weeks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

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Margaret Wilson
Planner
Office of Planning and Compliance
Grand Teton National Park
Phone: (307)739-3390

GRTE Mountain Goat Management Plan Draft Revi_6.pdf

DRAFT

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director
NPS Intermountain Region

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INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) with modifications to include the use of qualified volunteers for certain tasks to rapidly remove non-native mountain goats from the park by live capture, relocation and lethal means, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to remove non-native mountain goats within the park using a combination of non-lethal and lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within the parks' wilderness areas.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; (3) the field conditions present to successfully transport

Commented [RHE1]: What will be the impact of this if any?

carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat.

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

LIVE CAPTURE AND TRANSLOCATION

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Live capture operations will occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the

American Veterinary Medical Association (AVMA). After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park. Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.

Mountain goats could be captured and translocated over the course of 3−5 years between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and a significant portion of the population is in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

LETHAL REMOVAL

Mountain goats will be removed using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized. Animals will be dispatched by trained personnel following established and approved guidelines from the AVMA.

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig.

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

USE OF QUALIFIED VOLUNTEERS

The NPS will develop and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Qualified volunteers of the NPS will be limited to ground-based field efforts to safely locate and dispatch goats in accordance with guidelines that will be developed prior to initiation of a qualified volunteer program.

CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

MOUNTAIN GOAT MONITORING

Monitoring activities will include temporary capture (helicopter-based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, and possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following park-specific capture and handling protocols approved by the NPS veterinarian. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to

frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. Given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

NPS wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

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PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

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FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identifies ten criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed ~~in the EA because they were found to have no potential for significant impacts~~from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

Commented [RHE2]: New boilerplate.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

Commented [RHE3]: I added this from the FONSI template to make clear that there would be no significant impacts on these topics.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils, whitebark pine, and wilderness character; however, no potential for significant adverse impacts was identified.

Implementing the selected alternative may cause short-term disruptions (several minutes to hours) of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

Overall, the effects of the selected alternative are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. When the beneficial effects of Alternative C are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed

by this plan, the positive increment expected from Alternative C does not substantially change the overall cumulative impact.

Commented [RHE4]: I added the cumulative impacts summary language from the EA for each of the topics below.

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there ~~would~~ will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing

authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

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APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park archeologist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

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SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources. See Cultural Resources mitigation measures for additional requirements.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored throughout the season and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.

- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.

- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)

Volunteers will ensure carcass or gut piles are >100 yards from trails, campsites, camping zones, cabins, etc. If this is not practical, skilled volunteers will report the location of any remains to NPS so a temporary closure can be implemented.

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APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

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The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4)1 is revised by removing a reference to "tall forbs:"

Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

This condition removes vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

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The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods. T

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

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Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

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HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Commented [RHE5]: See my 8/9/19 comment; I'm not sure if Dave or Sarah had a chance to review this yet.

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors could attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) when possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts (2018–19) in Olympic National Park, as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

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ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

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CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave National Parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified (see page 5). The use of qualified volunteers has been added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment “in such a manner and by such means as will leave them unimpaired” for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species’ partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017),

with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants, , impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Commented [RHE6]: I don't see a response to this unless it was meant to be covered by the response about effects of goat and sheep on native vegetation?

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section, and an updated statement about the effects of mountain goat wallows are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be

identified. Because bighorn sheep live in remote, mountainous areas where access is challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (See Response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between

mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a

response is not anticipated. In mid-winter, the wolverine is the species most likely to be present in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon.. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

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Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

Fwd_ GRTE Revised Draft Mountain Goat Managemen...(1).pdf

From:	Rice, Heather
To:	Margaret; Daniel
Subject:	Fwd: GRTE Revised Draft Mountain Goat Management Plan FONSI Review Request (PEPC 47959)
Date:	Friday, August 30, 2019 9:14:59 AM
Attachments:	GRTE Mountain Goat Management Plan Draft Revised FONSI (2019_08_23) IMR Rice 8-28-19.docx GRTE Mountain Goat Management Plan Draft Revised FONSI (2019_08_23) IMR Rice 8-30-19.docx

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Attached is the latest 8-30-19 version of the FONSI, with my edits revised based on our discussion today. There's only the one issue on the goat wallowing comment & response (#30) left to be resolved. I've also uploaded this version to PEPC under the 8-23-19 FONSI that Daniel posted.

Once you have the issue resolved and the FONSI finalized, next steps will be to have supt sign and then send the whole package to me to start routing to the RD (including routing sheet). Heads-up that I'll be in the office until noon next Wednesday, then out until around noon on September 10th.

Thanks for all your help with this, Margaret!

Cheers,
Heather

****

Heather Rice
NEPA Specialist, Environmental Quality Division
Intermountain Region, National Park Service
12795 West Alameda Parkway | Denver, CO 80228
303-969-2975 office | 303-969-2717 fax
heather_rice@nps.gov | IMR-EQ Sharepoint Site

Have you seen the 2015 NPS NEPA Handbook??
Click here to check it out!

Plato on NEPA: "The beginning is the most important part of the work."

---------- Forwarded message ---------
From: **Rice, Heather** <heather_rice@nps.gov>
Date: Wed, Aug 28, 2019 at 10:18 AM
Subject: Fwd: GRTE Revised Draft Mountain Goat Management Plan FONSI Review Request (PEPC 47959)
To: Margaret <margaret_wilson@nps.gov>
Cc: Daniel <daniel_noon@nps.gov>

Hi Margaret,

I've finished my review of the revised FONSI et al and have attached my comments here. I don't have many (some are just changes in wording and some additions I should have caught before). Do you have time for a phone call to go over them? I'm here today until 3:30 and here

most of the day on Friday. Thanks! Once we've talked, I'll post these on PEPC.

Heather
****

Heather Rice
NEPA Specialist, Environmental Quality Division
Intermountain Region, National Park Service
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Have you seen the 2015 NPS NEPA Handbook??
Click here to check it out!

Plato on NEPA: "The beginning is the most important part of the work."

---------- Forwarded message ---------
From: **Noon, Daniel** <daniel_noon@nps.gov>
Date: Fri, Aug 23, 2019 at 1:25 PM
Subject: GRTE Revised Draft Mountain Goat Management Plan FONSI Review Request (PEPC 47959)
To: Heather Rice <heather_rice@nps.gov>
Cc: Dan Niosi <dan_niosi@nps.gov>, Richard (Joe) Neubauer <joe_neubauer@nps.gov>, Nida Shaheen <nida_holliday@nps.gov>, Susan (Sue) Consolo-Murphy <sue_consolo-murphy@nps.gov>, Margaret Wilson <margaret_wilson@nps.gov>

Hello Heather,

I placed the the park's revised draft Mountain Goat Management Plan FONSI in PEPC 47959 for a final review. Also included in PEPC are the three document reviews provided by park you, park management, and the DOI solicitors. I incorporated input from these three versions into the revised draft.

I'll inform the DOI solicitors in a separate email and will provide them the revised draft version along with their version with our responses to comments.

I will be out of the office beginning August 24; returning Monday, September 9. Please coordinate with Margaret Wilson, who will be acting Chief of Planning and Environmental Compliance during my absence (margaret_wilson@nps.gov, 307-739-3390). When ready, Margaret will route the final FONSI to our superintendent for recommendation and then to IMR EQD for regional director review and decision.

Thanks and have a great couple of weeks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway

(307) 739-3465
Email: daniel_noon@nps.gov

GRTE Mountain Goat Management Plan Draft Revi_7.pdf

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National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director
NPS Intermountain Region

DRAFT

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INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) with modifications to include the use of qualified volunteers for certain tasks to rapidly remove non-native mountain goats from the park by live capture, relocation and lethal means, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to remove non-native mountain goats within the park using a combination of non-lethal and lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within the parks' wilderness areas.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; (3) the field conditions present to successfully transport

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carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat.

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

LIVE CAPTURE AND TRANSLOCATION

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Live capture operations will occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the

American Veterinary Medical Association (AVMA). After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park. Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.

Mountain goats could be captured and translocated over the course of 3−5 years between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and a significant portion of the population is in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

LETHAL REMOVAL

Mountain goats will be removed using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized. Animals will be dispatched by trained personnel following established and approved guidelines from the AVMA.

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig.

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

USE OF QUALIFIED VOLUNTEERS

The NPS will develop and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Qualified volunteers of the NPS will be limited to ground-based field efforts to safely locate and dispatch goats in accordance with guidelines that will be developed prior to initiation of a qualified volunteer program.

CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

MOUNTAIN GOAT MONITORING

Monitoring activities will include temporary capture (helicopter-based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, and possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following park-specific capture and handling protocols approved by the NPS veterinarian. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to

frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. Given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

NPS wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

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PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

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FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identifies ten criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed ~~in the EA because they were found to have no potential for significant impacts~~from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

Commented [RHE2]: New boilerplate.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

Commented [RHE3]: I added this from the FONSI template to make clear that there would be no significant impacts on these topics.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils, whitebark pine, and wilderness character; however, no potential for significant adverse impacts was identified.

Implementing the selected alternative may cause short-term disruptions (several minutes to hours) of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

Overall, the effects of the selected alternative are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. When the beneficial effects of Alternative C are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed

by this plan, the positive increment expected from Alternative C does not substantially change the overall cumulative impact.

Commented [RHE4]: I added the cumulative impacts summary language from the EA for each of the topics below.

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there ~~would~~ will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing

authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

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APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park archeologist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

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SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources. See Cultural Resources mitigation measures for additional requirements.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored throughout the season and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.

- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.

- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)

Volunteers will ensure carcass or gut piles are >100 yards from trails, campsites, camping zones, cabins, etc. If this is not practical, skilled volunteers will report the location of any remains to NPS so a temporary closure can be implemented.

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APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

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The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4)1 is revised by removing a reference to "tall forbs:"

Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

This condition removes vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

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The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods. T

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

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Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

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HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Commented [RHE5]: See my 8/9/19 comment; I'm not sure if Dave or Sarah had a chance to review this yet.

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors could attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) when possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts (2018–19) in Olympic National Park, as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

DRAFT

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

DRAFT

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave National Parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified (see page 5). The use of qualified volunteers has been added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

DRAFT

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment “in such a manner and by such means as will leave them unimpaired” for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species’ partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017),

with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants, , impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Commented [RHE6]: I don't see a response to this unless it was meant to be covered by the response about effects of goat and sheep on native vegetation?

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section, and an updated statement about the effects of mountain goat wallows are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

DRAFT

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be

identified. Because bighorn sheep live in remote, mountainous areas where access is challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (See Response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between

mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a

response is not anticipated. In mid-winter, the wolverine is the species most likely to be present in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon.. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

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Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

Re_ Latest Draft of MOGO FONSI (9_3_19).pdf

From:	Consolo-Murphy, Susan (Sue)
To:	Wilson, Margaret
Cc:	Sarah Dewey
Subject:	Re: Latest Draft of MOGO FONSI (9/3/19)
Date:	Tuesday, September 3, 2019 11:58:00 AM
Attachments:	GRTE Mountain Goat Management Plan Draft Revised FONSI w SCM 9-3-19.docx

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Thanks, Margaret, I made a few comments still but it looks good. Appears that under the mitigation measures, you spoke with Sarah but in your response to my comment the detail of her response was missing. I just want to be sure we don't prevent ourselves from getting the goats out, in winter, as we need to bu the restrictions on helicopter use in a given year and am struggling to understand why we need both of the first two bullets in that section.

Sue Consolo-Murphy
Chief, Science & Resource Management
Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
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Sue_Consolo-murphy@nps.gov

On Tue, Sep 3, 2019 at 11:41 AM Wilson, Margaret <margaret_wilson@nps.gov> wrote:

> Hi sue,
>
> You were working off an older version of the MOGO FONSI, than what I received from IMR. I believe I integrated all of your comments if they were still necessary. Kelly already responded with the outstanding veg question. I have highlighted the question you had for Sarah.
>
> Please scan it one more time to be sure you are happy with it.
>
> Thank you.
>
> Margaret
>
> --
> Margaret Wilson
> Planner
> Office of Planning and Compliance
> Grand Teton National Park
> Phone: (307)739-3390

GRTE Mountain Goat Management Plan Draft Revi_11.pdf

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National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director
NPS Intermountain Region

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INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative)) to rapidly remove non-native mountain goats from the park by live capture, relocation and lethal means, with modifications to include the use of qualified volunteers for certain tasks and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to reduce non-native mountain goats within the park using a combination of non-lethal and lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within areas managed as wilderness.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of

eradicating individual mountain goats; (3) the field conditions present to successfully transport carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat.

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to monitoring and removal, which will occur year round as needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park from any direction and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

LIVE CAPTURE AND TRANSLOCATION

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Live capture operations could occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the American Veterinary Medical Association (AVMA). After reaching the staging areas, mountain

goats will be transported by recipients using road-based vehicles to translocation sites outside of the park. Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.

Mountain goats could be captured and translocated over the course of 1−5 years between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve likely to be -in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

LETHAL REMOVAL

Mountain goats will be removed using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized. Animals will be dispatched by trained personnel following established and approved guidelines from the AVMA.

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

USE OF QUALIFIED VOLUNTEERS

The NPS will develop and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Use of qualified volunteers of the NPS will be limited to ground-based field efforts to safely locate and dispatch goats in accordance with guidelines that will be developed prior to initiation of a qualified volunteer program.

CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

MOUNTAIN GOAT MONITORING

Monitoring activities will include temporary capture (helicopter-based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, and possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following park-specific capture and handling protocols approved by the NPS veterinarian. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to

frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. Given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

NPS wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

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PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

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FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identify~~ies~~ ten criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

Commented [CS(L1]: 'regulations' is the subject so the verb tense should be 'identify'

The following impact topics were dismissed from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils (including whitebark pine), and wilderness character; however, no potential for significant adverse impacts was identified.

Bighorn Sheep

Implementing the selected alternative may cause short-term (several minutes to hours) disruptions ~~(several minutes to hours)~~ of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to the bighorn sheep ~~at the~~ population ~~scale~~ will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

Overall, the effects of the selected alternative are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. When the beneficial effects of selected alternative are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed

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by this plan, the positive increment expected from the selected alternative does not substantially change the overall cumulative impact.

Vegetation and Soils

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work ~~areas~~ may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Commented [CS(L3]: I can't see that 'areas' lead to impact, the 'work' does

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures may affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently

baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

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APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park cultural resource specialist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

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SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored as needed and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).

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- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.
  - All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

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QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)

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APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

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The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4)1 is revised by removing a reference to "tall forbs:"

Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

This condition removes native vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

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The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

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Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

DRAFT

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors could attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) when possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts (2018–19) in Olympic National Park, as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

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ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

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CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave National Parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified (see page 5). The use of qualified volunteers has been added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment “in such a manner and by such means as will leave them unimpaired” for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species’ partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017),

with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants, impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Commented [RHE5]: I don't see a response to this unless it was meant to be covered by the response about effects of goat and sheep on native vegetation? (See Mike Merigliano comment letter #203 in PEPC)

Commented [WMS6]: Actual comment sent to KM and EK 8/30-19: Under the section on mountain goat wallows (page 43), there is a contradiction in the statement: "This condition removes vascular and non-vascular plant material resulting in no growth, no photosynthesis, and an open area available for colonization by other plant species, native or nonnative." With colonization of other plant species, there will be photosynthesis and plant growth. Although mountain goats add to their disturbance, pocket gophers churn-up a lot of soil. Plants on these churned-up sites are adapted to consistent disturbance. Do mountain goats wallow in areas that are particularly sensitive to soils disturbance?

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section, and an updated statement about the effects of mountain goat wallows are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be

identified. Because bighorn sheep live in remote, mountainous areas where access is challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (See Response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between

mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a

response is not anticipated. In mid-winter, the wolverine is the species most likely to be present in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon.. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

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Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

Fwd_ Mountain Goat FONSI for Gopaul’s Review an....pdf

From:	Wilson, Margaret
To:	Daniel Noon
Subject:	Fwd: Mountain Goat FONSI for Gopaul"s Review and Recommendation
Date:	Tuesday, September 3, 2019 4:17:28 PM
Attachments:	Mountain Goat Management Plan EA FONSI 9-3-19 to Gopaul.docx GRTE Mountain Goat FONSI Routing Sheet 2019-08-23.xlsx

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Sorry! Meant to CC you!

---------- Forwarded message ---------
From: **Wilson, Margaret** <margaret_wilson@nps.gov>
Date: Tue, Sep 3, 2019 at 4:15 PM
Subject: Mountain Goat FONSI for Gopaul's Review and Recommendation
To: Gopaul Noojibail <gopaul_noojibail@nps.gov>
Cc: Tozier, Katie <katie_tozier@nps.gov>, Sue Consolo-Murphy <Sue_Consolo-Murphy@nps.gov>, Denise Germann <denise_germann@nps.gov>, Brian Joyner <brian_joyner@nps.gov>

Hi Gopaul,

Here is the final Mountain Goat FONSI for your review and recommendation for RD signature. I am also attaching the routing sheet for your reference.

Please don't hesitate to contact me if you have any questions or concerns.

Thank you.

Margaret

--
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Mountain Goat Management Plan EA FONSI 9-3-19.pdf

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director
NPS Intermountain Region

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative)) to rapidly remove non-native mountain goats from the park by live capture, relocation and lethal means, with modifications to include the use of qualified volunteers for certain tasks and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to reduce non-native mountain goats within the park using a combination of non-lethal and lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within areas managed as wilderness.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; (3) the field conditions present to successfully transport

carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat.

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to monitoring and removal, which will occur year round as needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park from any direction and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

LIVE CAPTURE AND TRANSLOCATION

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Live capture operations could occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the American Veterinary Medical Association (AVMA). After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside

of the park. Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.

Mountain goats could be captured and translocated over the course of 1−5 years between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve likely to be in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

LETHAL REMOVAL

Mountain goats will be removed using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized. Animals will be dispatched by trained personnel following established and approved guidelines from the AVMA.

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

USE OF QUALIFIED VOLUNTEERS

The NPS will develop and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Use of qualified volunteers of the NPS will be limited to ground-based field efforts to safely locate and dispatch goats in accordance with guidelines that will be developed prior to initiation of a qualified volunteer program.

CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.
If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in

accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

MOUNTAIN GOAT MONITORING

Monitoring activities will include temporary capture (helicopter-based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, and possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following park-specific capture and handling protocols approved by the NPS veterinarian. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. Given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

NPS wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment

during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identify ten criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils (including whitebark pine), and wilderness character; however, no potential for significant adverse impacts was identified.

Bighorn Sheep

Implementing the selected alternative may cause short-term (several minutes to hours) disruptions of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to the bighorn sheep population will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

Overall, the effects of the selected alternative are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. When the beneficial effects of selected alternative are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed

by this plan, the positive increment expected from the selected alternative does not substantially change the overall cumulative impact.

Vegetation and Soils

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures may affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The

increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2) (c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park cultural resource specialist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored as needed and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:

    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
    - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
    - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.
    - All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)

APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4)1 is revised by removing a reference to "tall forbs:"

> Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

> This condition removes native vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring

and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors could attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) when possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts (2018–19) in Olympic National Park, as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave National Parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified (see page 5). The use of qualified volunteers has been added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment “in such a manner and by such means as will leave them unimpaired” for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species’ partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants, impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section, and an updated statement about the effects of mountain goat wallows are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is

challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (See Response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;

- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River

Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a response is not anticipated. In mid-winter, the wolverine is the species most likely to be present

in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

GRTE Mountain Goat FONSI Routing Sheet 2019-0.pdf

Signature Request
From
IMR Planning & Environmental Quality

Routing:

Phase One: Division Routing

	Reviewer Title	Reviewer Name	Initials & Date
	Branch Chief, Compliance	Dan Niosi	
	Chief, Planning & Environmental Quality	Jeremy Sweat	
	Chief, Geographic Resources (GIS)	Nell Conti	
	Program Manager/Coordinator, Colorado River	Rob Billerbeck	
	Chief, Landscape Conservation & Climate Change	Tom Olliff	
	Chief, Submerged Resources Center	Dave Conlin	
	Chief, Cultural Resources Division	Amy K. Cole	
	Supervisory Historian, Heritage Partnerships	Justin Henderson	
	Chief, Natural Resources Division	Patrick Malone	
ALWAYS	Planning & Environmental Quality Program Assistant	*Vacant*	

Phase Two: Executive Suite Routing

ALWAYS	RD Suite Administrative Support	*Michele Klossowski or Michael Roche*
	Associate Regional Director, Resource Stewardship & Science	Patrick Malone (Acting)
	Deputy Regional Director, Chief of Staff	Kate H. Hammond
	Deputy Regional Director, Protection, Partnerships & Interpretation	Rick M. Frost
	Regional Director, Intermountain Region	Chip Jenkins (Acting)

Phase Three: Return to Division

ALWAYS	Planning & Environmental Quality Program Assistant	*Vacant*

Key Information:

X Type/Name of Documents included: Grand Teton National Park Mountain Goat Management Plan FONSI

X Deadline or Other Important Date: 9/13/2019

Action:

Per DO-12 §5.3, the RD (or acting), is required to sign all FONSIs.

Background:

Grand Teton National Park (GRTE) has prepared an EA to implement a plan to remove non-native mountain goats from GRTE and John D. Rockefeller, Jr. Memorial Parkway (JODR) (collectively the park). Prompt action is needed to remove or significantly reduce non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission. The EA was made available for public review and comment during a 30-day (total) period, on December 4–20, 2018 and on February 4–15, 2019. The park received 202 correspondences during the public review period. Substantive comments primarily centered on history and status of mountain goats in the Teton Range, lethal and non-lethal removal methods, the use of qualified volunteers, translocations to areas outside of the park, mountain goat carcasses and meat donation, and bighorn sheep conservation. Responses to substantive comments are provided in Appendix B. Public comments resulted in minor changes to the text of the EA, also located in the Appendix B. This plan was included in the August 14, 2019 Weekly Report.

View of Others:

This proposal has been reviewed and supported by Acting Superintendent Gopaul Noojibail. Consultations with the Wyoming State Historic Presrvation Office (NHPA section 106) and U.S. Fish and Wildlife Service (ESA section &) have been completed. The 24 Tribes associated with the the park have been informed on several occasions of the proposed plan. The park recieved feedback from 11 Tribes. Consultations with interested Tribes are anticipated to continue during plan implemenation (if approved). The park has responded to specific comments provided by the Wyoming Game and Fish Department, including the Game and Fish Commission. DOI solicitors have reviewed the FONSI and provided input. IMR-EQD (Rice) has reviewed the FONSI and requests RD signature.

Revised Mountain Goat Management Plan FONSI (20....pdf

From:	Noon, Daniel
To:	Susan (Sue) Consolo-Murphy
Subject:	Revised Mountain Goat Management Plan FONSI (2019-09-13)
Date:	Friday, September 13, 2019 1:27:59 PM
Attachments:	Mountain Goat Management Plan EA FONSI 9-13-19 to Gopaul.docx

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Hi Sue,

Attached is the revised Mountain Goat Management Plan FONSI based on the discussion we had with Gopaul this morning. I rearranged the various sections and made the changes. Substantive changes are highlighted in yellow.

I have the following comments for follow-up (see comments in attachment):

- Mountain Goat Monitoring section.
- Comment/response 12 regarding Transfer of Mountain Goats to Zoos

I'll be here through the remainder of the afternoon if you would like to discuss further. I'll incorporate your revisions when ready and will provide a hard copy for Gopaul to review and sign.

Thanks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

Mountain Goat Management Plan EA FONSI 9-13-1.pdf

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

_____

Gopaul Noojibail Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

_____

Palmer L. Jenkins Date
Acting Regional Director
NPS Intermountain Region

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) to rapidly remove non-native mountain goats from the park by lethal and non-lethal (live capture and translocation) removal methods with modifications to include the use of qualified volunteers to assist in lethal removal activities, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to reduce non-native mountain goats within the park using lethal and non-lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within areas managed as wilderness.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of

eradicating individual mountain goats; (3) the field conditions present to successfully transport carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat.

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible by lethal and non-lethal methods. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to monitoring and removal, which will occur year round as needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park from any direction and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

LETHAL REMOVAL

Mountain goats will be dispatched using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct (use of firearms) lethal removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized on site. Animals will be dispatched by trained personnel following established and approved guidelines from the American Veterinary Medical Association (AVMA).

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based lethal removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing

monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

Use of Qualified Volunteers

The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

NON-LETHAL REMOVAL (LIVE CAPTURE AND TRANSLOCATION)

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Mountain goats could be captured and translocated over the course of 1−5 years primarily between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and likely to be in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

Commented [ND1]: Relocated paragraph from end of section.

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

Live capture operations could occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the AVMA. After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park. ~~Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.~~

Commented [ND2]: Statement contradicts previous statement: "primarily between December and March."

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian

Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

MOUNTAIN GOAT MONITORING

Commented [ND3]: If the goal is to rapidly remove mountain goats from the goal, why is there a need to capture and release mountain goats in the park for monitoring purposes? Consider revising the monitoring section.

Monitoring activities will include temporary capture (helicopter-based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, and possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following park-specific capture and handling protocols approved by the NPS veterinarian. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. Given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

Park wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

National Historic Preservation Act

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

Endangered Species Act

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

Tribal Consultations

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho

Tribes, Coeur D'Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identify ten criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils (including whitebark pine), and wilderness character; however, no potential for significant adverse impacts was identified.

Bighorn Sheep

Implementing the selected alternative may cause short-term (several minutes to hours) disruptions of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to the bighorn sheep population will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

Overall, the effects of the selected alternative are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. When the beneficial effects of selected alternative are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed by this plan, the benefit expected from implementing the selected alternative will not significantly change the overall cumulative adverse impact on bighorn sheep.

Vegetation and Soils

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work may lead to some impact on soils and vegetation where mountain goats are present as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures may affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring

activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2) (c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park cultural resource specialist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored as needed and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:

    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
    - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
    - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.
    - All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2 individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)

APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4) is revised by removing a reference to "tall forbs:"

> Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

> This condition removes native vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods.

The original text located on page 49 of the EA is replaced with the text provided below:

> **Alternative C – Combination of Lethal and Non-Lethal Removal**
>
> **Direct and Indirect Impacts**
>
> Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring

and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Year	**Number Tested**	**Lkt+[1] B. trehalosi[2]**	**M. haemolytica[3]**	**Lkt+ M. spp.[4]**	**P. multocida[5]**	**M. ovi[6]**
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors could attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) when possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother.

Commented [ND4]: This level of consideration is not provided in the non-lethal removal section of the selected alternative. Recommend either not being as prescriptive in this section or revise the non-lethal section that provides these details. Suggestions?

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts in Olympic National Park (2018–19), as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave national parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified. The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment “in such a manner and by such means as will leave them unimpaired” for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species’ partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants, impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section, and an updated statement about the effects of mountain goat wallows are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is

challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (see response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside of the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;

- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River

Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a response is not anticipated. In mid-winter, the wolverine is the species most likely to be present

in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

Fwd_ GRTE Revised Draft Mountain Goat Managemen....pdf

From:	Rice, Heather
To:	Margaret
Subject:	Fwd: GRTE Revised Draft Mountain Goat Management Plan FONSI Review Request (PEPC 47959)
Date:	Monday, September 16, 2019 3:57:05 PM
Attachments:	GRTE Mountain Goat Management Plan Draft Revised FONSI (2019_08_23) IMR Rice 8-28-19.docx

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Hi Margaret,

Here's the EA with my most recent comments (8/28/19 version). The ones I don't see addressed yet in the supt-signed FONSI are my comments on page 3 of the 8/28/19 version and the comment about Comment and Response #30 on page 31 of the 8/28/19 version.

Cheers,
H
****

Heather Rice
NEPA Specialist, Environmental Quality Division
National Park Service Regional Office Serving Department of Interior Regions 5,6,7,8 & 9
12795 West Alameda Parkway | Denver, CO 80228
303-969-2975 office | 303-969-2717 fax
heather_rice@nps.gov | IMR-EQ Sharepoint Site

Have you seen the 2015 NPS NEPA Handbook??
Click here to check it out!

Plato on NEPA: "The beginning is the most important part of the work."

---------- Forwarded message ---------
From: **Rice, Heather** <heather_rice@nps.gov>
Date: Wed, Aug 28, 2019 at 10:18 AM
Subject: Fwd: GRTE Revised Draft Mountain Goat Management Plan FONSI Review Request (PEPC 47959)
To: Margaret <margaret_wilson@nps.gov>
Cc: Daniel <daniel_noon@nps.gov>

Hi Margaret,

I've finished my review of the revised FONSI et al and have attached my comments here. I don't have many (some are just changes in wording and some additions I should have caught before). Do you have time for a phone call to go over them? I'm here today until 3:30 and here most of the day on Friday. Thanks! Once we've talked, I'll post these on PEPC.

Heather
****

Heather Rice
NEPA Specialist, Environmental Quality Division
Intermountain Region, National Park Service
12795 West Alameda Parkway | Denver, CO 80228
303-969-2975 office | 303-969-2717 fax
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Have you seen the 2015 NPS NEPA Handbook??
Click here to check it out!

Plato on NEPA: "The beginning is the most important part of the work."

---------- Forwarded message ---------
From: **Noon, Daniel** <daniel_noon@nps.gov>
Date: Fri, Aug 23, 2019 at 1:25 PM
Subject: GRTE Revised Draft Mountain Goat Management Plan FONSI Review Request (PEPC 47959)
To: Heather Rice <heather_rice@nps.gov>
Cc: Dan Niosi <dan_niosi@nps.gov>, Richard (Joe) Neubauer <joe_neubauer@nps.gov>, Nida Shaheen <nida_holliday@nps.gov>, Susan (Sue) Consolo-Murphy <sue_consolo-murphy@nps.gov>, Margaret Wilson <margaret_wilson@nps.gov>

Hello Heather,

I placed the the park's revised draft Mountain Goat Management Plan FONSI in PEPC 47959 for a final review. Also included in PEPC are the three document reviews provided by park you, park management, and the DOI solicitors. I incorporated input from these three versions into the revised draft.

I'll inform the DOI solicitors in a separate email and will provide them the revised draft version along with their version with our responses to comments.

I will be out of the office beginning August 24; returning Monday, September 9. Please coordinate with Margaret Wilson, who will be acting Chief of Planning and Environmental Compliance during my absence (margaret_wilson@nps.gov, 307-739-3390). When ready, Margaret will route the final FONSI to our superintendent for recommendation and then to IMR EQD for regional director review and decision.

Thanks and have a great couple of weeks!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

GRTE Mountain Goat Management Plan Draft Revi_12.pdf

DRAFT

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director
NPS Intermountain Region

DRAFT

DRAFT

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) with modifications to include the use of qualified volunteers for certain tasks to rapidly remove non-native mountain goats from the park by live capture, relocation and lethal means, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to remove non-native mountain goats within the park using a combination of non-lethal and lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within the parks' wilderness areas.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; (3) the field conditions present to successfully transport

Commented [RHE1]: What will be the impact of this if any?

carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat.

MANAGEMENT FRAMEWORK

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

LIVE CAPTURE AND TRANSLOCATION

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Live capture operations will occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the

American Veterinary Medical Association (AVMA). After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park. Translocations will occur primarily from late-October through early March, but could occur at other times of the year as necessary.

Mountain goats could be captured and translocated over the course of 3−5 years between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and a significant portion of the population is in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

LETHAL REMOVAL

Mountain goats will be removed using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized. Animals will be dispatched by trained personnel following established and approved guidelines from the AVMA.

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig.

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

ARTIFICIAL BAITS

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

HELICOPTERS AND FIREARMS

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

USE OF QUALIFIED VOLUNTEERS

The NPS will develop and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Qualified volunteers of the NPS will be limited to ground-based field efforts to safely locate and dispatch goats in accordance with guidelines that will be developed prior to initiation of a qualified volunteer program.

CARCASS DISPOSAL

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

TEMPORARY CLOSURES

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

MOUNTAIN GOAT MONITORING

Monitoring activities will include temporary capture (helicopter-based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats will provide a more complete assessment of mountain goat survival, productivity, distribution, and possible competitive interactions with, and influences on, bighorn sheep.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

For monitoring purposes mountain goats will be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following park-specific capture and handling protocols approved by the NPS veterinarian. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs will be collected from goats transported to

frontcountry sites to assess disease, micronutrient, or genetic status. These goats will then be radio-collared and returned to the capture location for release.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that timeframe. Given favorable weather conditions, approximately 10 goats could be captured in a 5-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes will likely take place in a 5−7 day window during the late fall and winter months when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

EDUCATION AND INTERPRETATION

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

WILDERNESS CHARACTER MONITORING

NPS wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

COOPERATION WITH LAND AND WILDLIFE MANAGERS

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

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PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

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FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identifies ten criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed ~~in the EA because they were found to have no potential for significant impacts~~from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

Commented [RHE2]: New boilerplate.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

Commented [RHE3]: I added this from the FONSI template to make clear that there would be no significant impacts on these topics.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils, whitebark pine, and wilderness character; however, no potential for significant adverse impacts was identified.

Implementing the selected alternative may cause short-term disruptions (several minutes to hours) of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

Overall, the effects of the selected alternative are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. When the beneficial effects of Alternative C are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed

by this plan, the positive increment expected from Alternative C does not substantially change the overall cumulative impact.

Commented [RHE4]: I added the cumulative impacts summary language from the EA for each of the topics below.

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there ~~would~~ will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures will affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing

authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

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APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park archeologist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

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SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources. See Cultural Resources mitigation measures for additional requirements.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored throughout the season and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.

- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.
- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.

- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)

Volunteers will ensure carcass or gut piles are >100 yards from trails, campsites, camping zones, cabins, etc. If this is not practical, skilled volunteers will report the location of any remains to NPS so a temporary closure can be implemented.

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APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

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The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4)1 is revised by removing a reference to "tall forbs:"

Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

This condition removes vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

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The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods. T

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

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Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

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HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Commented [RHE5]: See my 8/9/19 comment; I'm not sure if Dave or Sarah had a chance to review this yet.

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, contractors could attempt to capture and transport family groups (i.e., adult females accompanied by young of the year) when possible. However, if young of the year cannot be positively matched with their mothers, the young could be transferred to an accredited zoo. Previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for translocated young of the year primarily due to orphaning during the translocation process. Because survival prospects for mountain goat young of the year is significantly lower when they are orphaned, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts (2018–19) in Olympic National Park, as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

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ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

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CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of "specific conservation measures" the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states "given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…" The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave National Parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified (see page 5). The use of qualified volunteers has been added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).The NPS will initiate and manage a qualified volunteer program to assist in the rapid removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909). Qualified volunteers will be limited to ground-based field activities.

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment “in such a manner and by such means as will leave them unimpaired” for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species’ partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017),

with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants, , impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Commented [RHE6]: I don't see a response to this unless it was meant to be covered by the response about effects of goat and sheep on native vegetation?

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section, and an updated statement about the effects of mountain goat wallows are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

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AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be

identified. Because bighorn sheep live in remote, mountainous areas where access is challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (See Response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between

mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a

response is not anticipated. In mid-winter, the wolverine is the species most likely to be present in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon.. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

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Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

Updated MOGO FONSI.pdf

From:	Wilson, Margaret
To:	Daniel Noon
Subject:	Updated MOGO FONSI
Date:	Tuesday, September 17, 2019 4:29:39 PM
Attachments:	GRTE Mountain Goat Management Plan FONSI Superintendent Signed 2019-9-17.pdf

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Check it and let me know if it is ready.

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Margaret Wilson
Planner
Office of Planning and Compliance
Grand Teton National Park
Phone: (307)739-3390

GRTE Mountain Goat Management Plan FONSI Super.pdf

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

16 September 2019

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director
NPS Intermountain Region

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) to rapidly remove non-native mountain goats from the park by lethal and non-lethal (live capture and translocation) removal methods with modifications to include the use of qualified volunteers to assist in lethal removal activities, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to reduce non-native mountain goats within the park using lethal and non-lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within areas managed as wilderness.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and

other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; (3) the field conditions present to successfully transport carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat. Although the donation of the mountain goat carcasses was not analyzed in the EA, it does not change the environmental impacts described in the EA.

Management Framework

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible by lethal and non-lethal methods. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to monitoring and removal, which will occur year round as needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park from any direction and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

Lethal Removal

Mountain goats will be dispatched using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct (use of firearms) lethal removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized on site. Animals will be dispatched by trained personnel following established and approved guidelines from the American Veterinary Medical Association (AVMA).

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based lethal removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are

unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

Use of Qualified Volunteers

The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the “Use of Volunteers for Wildlife Management in Parks,” and Director’s Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Non-Lethal Removal (Live Capture and Translocation)

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Mountain goats could be captured and translocated over the course of 1−5 years primarily between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to when lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and likely to be in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture

efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

Live capture operations could occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the AVMA. After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park.

Artificial Baits

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

Helicopters and Firearms

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

Carcass Disposal

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

Temporary Closures

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

Mountain Goat Monitoring

As needed to monitor or improve the success of control efforts, monitoring activities will include fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. It may be necessary to temporarily capture (helicopter-based), radio-collar and/or mark with paint goats prior to releasing them for the purpose of tracking them to a more suitable location and/or time for removal.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

If mountain goats are captured and released, park-specific capture protocols approved by the NPS veterinarian will be followed. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured in any season. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

Education and Interpretation

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

Wilderness Character Monitoring

Park wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

Cooperation with Land and Wildlife Managers

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two

hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

National Historic Preservation Act

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

Endangered Species Act

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

Tribal Consultations

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identify ten criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils (including whitebark pine), and wilderness character; however, no potential for significant adverse impacts was identified.

Bighorn Sheep

Implementing the selected alternative may cause short-term (several minutes to hours) disruptions of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to the bighorn sheep population will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

Overall, the effects of the selected alternative are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. When the beneficial effects of selected alternative are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed

by this plan, the benefit expected from implementing the selected alternative will not significantly change the overall cumulative adverse impact on bighorn sheep.

Vegetation and Soils

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work may lead to some impact on soils and vegetation where mountain goats are present as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures may affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The

increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2) (c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park cultural resource specialist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2 individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place).

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored as needed and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.

- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
    - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
    - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.
    - All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4) is revised by removing a reference to "tall forbs:"

> Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

> This condition removes native vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination of Lethal and Non-Lethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Year	**Number Tested**	**Lkt+[1] B. trehalosi[2]**	**M. haemolytica[3]**	**Lkt+ M. spp.[4]**	**P. multocida[5]**	**M. ovi[6]**
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, the capture and transport of family groups (adult females accompanied by young of the year) would occur when possible. Since previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for goats orphaned during translocation, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing them without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain

goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts in Olympic National Park (2018–19), as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in

locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of “specific conservation measures” the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states “given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…” The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave national parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified. The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species' partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants,

impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

Mountain goats wallow in particularly sensitive soils - high elevation, very shallow, readily disturbed with a short growing season; therefore, colonization is slow. The mountain goats are also known to use the same winter sites for many years so repeated disturbance damages soils.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because

a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (see response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside of the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a response is not anticipated. In mid-winter, the wolverine is the species most likely to be present

in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

Re_ GRTE_JODR Mountain Goat Management Plan_EA ....pdf

From:	Noon, Daniel
To:	Rice, Heather; Joe
Cc:	Wilson, Margaret; Daniel Niosi
Subject:	Re: GRTE/JODR Mountain Goat Management Plan/EA FONSI RD Approval Routing Request (PEPC 47959)
Date:	Tuesday, September 17, 2019 4:42:29 PM
Attachments:	GRTE Mountain Goat Management Plan FONSI Superintendent Signed 2019-9-17.pdf

Heather and Joe,

I made one final (and minor) change to the FONSI (response #30 - page 29). I removed the statement regarding information about wallowing added to the errata section. The response is a clarification related to goat wallowing and not an error.

Please route the revised attached version for RD review and decision.

Thank you.

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Tue, Sep 17, 2019 at 8:42 AM Rice, Heather <heather_rice@nps.gov> wrote:

> Thanks, Margaret!! I forgot that Dan is out of the office so Joe Neubauer (copied), will route it on to the RD. I'll let you know as soon as it's signed.
>
> Cheers,
> Heather
> **********
>
> Heather Rice
> NEPA Specialist, Environmental Quality Division
> National Park Service Regional Office Serving Department of Interior Regions 5,6,7,8 & 9
> 12795 West Alameda Parkway | Denver, CO 80228
> 303-969-2975 office | 303-969-2717 fax
> heather_rice@nps.gov | IMR-EQ Sharepoint Site
>
> *Have you seen the 2015 NPS NEPA Handbook??*
> *Click here to check it out!*
>
> Plato on NEPA: "The beginning is the most important part of the work."
>
> On Tue, Sep 17, 2019 at 8:34 AM Wilson, Margaret <margaret_wilson@nps.gov> wrote:
>
> > Hi Heather and Dan,
> >
> > Here is the updated GRTE Mountain Goat Management Plan FONSI signed by Gopaul.
> >
> > If you have any questions, please contact me.

Thank you!

Margaret

On Mon, Sep 16, 2019 at 5:22 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

Hi Margaret,

FYI. Thanks for making the revisions that Heather suggested to the FONSI.

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

---------- Forwarded message ---------
From: **Noon, Daniel** <daniel_noon@nps.gov>
Date: Mon, Sep 16, 2019 at 9:09 AM
Subject: GRTE/JODR Mountain Goat Management Plan/EA FONSI RD Approval Routing Request (PEPC 47959)
To: Heather Rice <heather_rice@nps.gov>
Cc: Dan Niosi <dan_niosi@nps.gov>, Richard (Joe) Neubauer <joe_neubauer@nps.gov>, David Hurd <david_hurd@nps.gov>, Nida Shaheen <nida_shaheen@nps.gov>, Jeremy Sweat <jeremy_sweat@nps.gov>, Gopaul Noojibail <gopaul_noojibail@nps.gov>, Joyner, Brian <brian_joyner@nps.gov>, Susan (Sue) Consolo-Murphy <sue_consolo-murphy@nps.gov>, David Gustine <dave_gustine@nps.gov>, Sarah Dewey <sarah_dewey@nps.gov>

Hello Heather,

The Grand Teton National Park (GRTE) and John D. Rockefeller, Jr. Memorial Parkway (JODR) Mountain Goat Management Plan / Environmental Assessment Finding of No Significant Impact (FONSI) is ready for Intermountain Regional Director (RD) review and approval.

Acting Superintendent Gopaul Noojibail recommended the FONSI today (September 16). I uploaded the signed FONSI into the Internal Documents section of PEPC 47959.

Attached is the RD routing sheet. If you have any questions, please contact me.

Thank you.

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park

John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

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Margaret Wilson
Planner
Office of Planning and Compliance
Grand Teton National Park
Phone: (307)739-3390

GRTE Mountain Goat Management Plan FONSI Super_1.pdf

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

16 September 2019

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director
NPS Intermountain Region

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) to rapidly remove non-native mountain goats from the park by lethal and non-lethal (live capture and translocation) removal methods with modifications to include the use of qualified volunteers to assist in lethal removal activities, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to reduce non-native mountain goats within the park using lethal and non-lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within areas managed as wilderness.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and

other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; (3) the field conditions present to successfully transport carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat. Although the donation of the mountain goat carcasses was not analyzed in the EA, it does not change the environmental impacts described in the EA.

Management Framework

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible by lethal and non-lethal methods. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to monitoring and removal, which will occur year round as needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park from any direction and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

Lethal Removal

Mountain goats will be dispatched using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct (use of firearms) lethal removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized on site. Animals will be dispatched by trained personnel following established and approved guidelines from the American Veterinary Medical Association (AVMA).

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based lethal removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are

unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

Use of Qualified Volunteers

The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the “Use of Volunteers for Wildlife Management in Parks,” and Director’s Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Non-Lethal Removal (Live Capture and Translocation)

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Mountain goats could be captured and translocated over the course of 1−5 years primarily between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to when lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and likely to be in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture

efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

Live capture operations could occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the AVMA. After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park.

Artificial Baits

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

Helicopters and Firearms

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

Carcass Disposal

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

Temporary Closures

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

Mountain Goat Monitoring

As needed to monitor or improve the success of control efforts, monitoring activities will include fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. It may be necessary to temporarily capture (helicopter-based), radio-collar and/or mark with paint goats prior to releasing them for the purpose of tracking them to a more suitable location and/or time for removal.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

If mountain goats are captured and released, park-specific capture protocols approved by the NPS veterinarian will be followed. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured in any season. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

Education and Interpretation

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

Wilderness Character Monitoring

Park wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

Cooperation with Land and Wildlife Managers

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two

hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

National Historic Preservation Act

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

Endangered Species Act

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

Tribal Consultations

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identify ten criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils (including whitebark pine), and wilderness character; however, no potential for significant adverse impacts was identified.

Bighorn Sheep

Implementing the selected alternative may cause short-term (several minutes to hours) disruptions of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to the bighorn sheep population will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

Overall, the effects of the selected alternative are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. When the beneficial effects of selected alternative are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed

by this plan, the benefit expected from implementing the selected alternative will not significantly change the overall cumulative adverse impact on bighorn sheep.

Vegetation and Soils

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work may lead to some impact on soils and vegetation where mountain goats are present as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures may affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The

increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2) (c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park cultural resource specialist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2 individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place).

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored as needed and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.

- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
    - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
    - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.
    - All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4) is revised by removing a reference to "tall forbs:"

> Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

> This condition removes native vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination of Lethal and Non-Lethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Year	**Number Tested**	**Lkt+[1] B. trehalosi[2]**	**M. haemolytica[3]**	**Lkt+ M. spp.[4]**	**P. multocida[5]**	**M. ovi[6]**
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, the capture and transport of family groups (adult females accompanied by young of the year) would occur when possible. Since previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for goats orphaned during translocation, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing them without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain

goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts in Olympic National Park (2018–19), as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in

locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of “specific conservation measures” the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states “given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…” The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave national parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified. The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species' partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants,

impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

Mountain goats wallow in particularly sensitive soils - high elevation, very shallow, readily disturbed with a short growing season; therefore, colonization is slow. The mountain goats are also known to use the same winter sites for many years so repeated disturbance damages soils.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because

a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (see response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside of the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a response is not anticipated. In mid-winter, the wolverine is the species most likely to be present

in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

Re_ Acting RD Title Change for FONSI(3).pdf

From: Noon, Daniel
To: Rice, Heather
Subject: Re: Acting RD Title Change for FONSI
Date: Monday, September 23, 2019 1:23:56 PM
Attachments: GRTE Mountain Goat Management Plan FONSI Superintendent Signed 2019-9-16.pdf

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Hi Heather,

Thank you for providing the updated Regional Director signature title. Attached is the updated Mountain Goat Management Plan FONSI.

The park is anticipating a review and decision on the FONSI by the end of the month. Please inform me on the status of the FONSI as it moves through the routing process. I greatly appreciate it!

Thanks again!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Mon, Sep 23, 2019 at 12:59 PM Rice, Heather <heather_rice@nps.gov> wrote:

> Change title to:
>
> Acting Regional Director, National Park Service Regional Office
> Serving Department of Interior Regions 5, 6, 7, 8, & 9
>
> **********
>
> Heather Rice
> NEPA Specialist, Environmental Quality Division
> National Park Service Regional Office Serving Department of Interior Regions 5,6,7,8 & 9
> 12795 West Alameda Parkway | Denver, CO 80228
> 303-969-2975 office | 303-969-2717 fax
> heather_rice@nps.gov | IMR-EQ Sharepoint Site
>
> *Have you seen the 2015 NPS NEPA Handbook??*
> *Click here to check it out!*
>
> Plato on NEPA: "The beginning is the most important part of the work."

GRTE Mountain Goat Management Plan FONSI Super_2.pdf

Re_ Acting RD Title Change for FONSI(2).pdf

From:	Noon, Daniel
To:	Rice, Heather
Subject:	Re: Acting RD Title Change for FONSI
Date:	Thursday, September 26, 2019 8:01:41 AM
Attachments:	GRTE Mountain Goat Management Plan FONSI [Superintendent Signed 2019-09-16 Updated].docx

Hi Heather,

Here is the Word version of the latest FONSI, as requested. Thank you for the update and routing the decision to the RD.

Have a great day!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Thu, Sep 26, 2019 at 7:08 AM Rice, Heather <heather_rice@nps.gov> wrote:

> Hi Dan,
>
> Dan, Patrick and Amy all reviewed this FONSI concurrently and I received comments yesterday. There are a few small edits that are needed, but I can make them if you send me the last version in Word (the 9/17 version in which you removed the reference to the errata in comment #30). Once I've made those changes, the FONSI will go directly to the RD (I'm told Chip returns to the office on Monday).
>
> Thanks!
>
> Heather
> **********
> Heather Rice
> NEPA Specialist, Environmental Quality Division
> National Park Service Regional Office Serving Department of Interior Regions 5,6,7,8 & 9
> 12795 West Alameda Parkway | Denver, CO 80228
> 303-969-2975 office | 303-969-2717 fax
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>
> *Have you seen the 2015 NPS NEPA Handbook??*
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>
> Plato on NEPA: "The beginning is the most important part of the work."
>
> On Mon, Sep 23, 2019 at 3:07 PM Rice, Heather <heather_rice@nps.gov> wrote:
>
> > Thank you, Daniel! And, again, I'm sorry about that last-minute change. Starting today, the FONSI will be routed in the following order (note that Dan and Patrick will be reviewing at the same time):

1. Dan Niosi, REC and also acting this week as Chief of Planning and Compliance (normally Jeremy Sweat)
2. Patrick Malone, Assistant Regional Director, Natural Resources
3. Amy Cole, Acting Associate Regional Director for Resource Stewardship and Science
4. Chip Jenkins, Acting Regional Director

I've marked this urgent and have asked for an RD signature date of Monday, Sept 30th, if at all possible, in order to start implementing the plan this fall. I'll track this closely and will let you know each time it moves past one of the sur-namers on its way to the RD, as well as when it lands on the RD's desk.

Cheers,
Heather
****

Heather Rice
NEPA Specialist, Environmental Quality Division
National Park Service Regional Office Serving Department of Interior Regions 5,6,7,8 & 9
12795 West Alameda Parkway | Denver, CO 80228
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Have you seen the 2015 NPS NEPA Handbook??
Click here to check it out!

Plato on NEPA: "The beginning is the most important part of the work."

On Mon, Sep 23, 2019 at 1:23 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

> Hi Heather,
>
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>
> The park is anticipating a review and decision on the FONSI by the end of the month. Please inform me on the status of the FONSI as it moves through the routing process. I greatly appreciate it!
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> Thanks again!
>
> Daniel Noon
> Chief of Planning and Environmental Compliance
> Grand Teton National Park
> John D. Rockefeller, Jr. Memorial Parkway
> (307) 739-3465
> Email: daniel_noon@nps.gov
>
> On Mon, Sep 23, 2019 at 12:59 PM Rice, Heather <heather_rice@nps.gov> wrote:

Change title to:

Acting Regional Director, National Park Service Regional Office
Serving Department of Interior Regions 5, 6, 7, 8, & 9

****

Heather Rice
NEPA Specialist, Environmental Quality Division
National Park Service Regional Office Serving Department of Interior Regions 5,6,7,8 & 9
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Have you seen the 2015 NPS NEPA Handbook??
Click here to check it out!

Plato on NEPA: "The beginning is the most important part of the work."

GRTE Mountain Goat Management Plan FONSI [Sup.pdf

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director, National Park Service Regional Office
Serving Department of Interior Regions 5, 6, 7, 8, & 9

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or significantly reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) to rapidly remove non-native mountain goats from the park by lethal and non-lethal (live capture and translocation) removal methods with modifications to include the use of qualified volunteers to assist in lethal removal activities, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to reduce non-native mountain goats within the park using lethal and non-lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within areas managed as wilderness.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and

other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; (3) the field conditions present to successfully transport carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat. Although the donation of the mountain goat carcasses was not analyzed in the EA, it does not change the environmental impacts described in the EA.

Management Framework

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible by lethal and non-lethal methods. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to monitoring and removal, which will occur year round as needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park from any direction and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

Lethal Removal

Mountain goats will be dispatched using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct (use of firearms) lethal removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized on site. Animals will be dispatched by trained personnel following established and approved guidelines from the American Veterinary Medical Association (AVMA).

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based lethal removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are

unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

Use of Qualified Volunteers

The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the “Use of Volunteers for Wildlife Management in Parks,” and Director’s Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Non-Lethal Removal (Live Capture and Translocation)

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Mountain goats could be captured and translocated over the course of 1−5 years primarily between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to when lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and likely to be in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture

efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

Live capture operations could occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the AVMA. After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park.

Artificial Baits

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

Helicopters and Firearms

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

Carcass Disposal

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

Temporary Closures

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

Mountain Goat Monitoring

As needed to monitor or improve the success of control efforts, monitoring activities will include fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. It may be necessary to temporarily capture (helicopter-based), radio-collar and/or mark with paint goats prior to releasing them for the purpose of tracking them to a more suitable location and/or time for removal.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

If mountain goats are captured and released, park-specific capture protocols approved by the NPS veterinarian will be followed. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured in any season. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

Education and Interpretation

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

Wilderness Character Monitoring

Park wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

Cooperation with Land and Wildlife Managers

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two

hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

National Historic Preservation Act

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

Endangered Species Act

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species listed from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

Tribal Consultations

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identify ten criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils (including whitebark pine), and wilderness character; however, no potential for significant adverse impacts was identified.

Bighorn Sheep

Implementing the selected alternative may cause short-term (several minutes to hours) disruptions of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to the bighorn sheep population will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

Overall, the effects of the selected alternative are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. When the beneficial effects of selected alternative are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed

by this plan, the benefit expected from implementing the selected alternative will not significantly change the overall cumulative adverse impact on bighorn sheep.

Vegetation and Soils

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work may lead to some impact on soils and vegetation where mountain goats are present as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures may affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The

increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2) (c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park cultural resource specialist will be contact for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2 individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place).

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored as needed and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.

- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
    - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
    - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.
    - All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4) is revised by removing a reference to "tall forbs:"

> Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

> This condition removes native vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination of Lethal and Non-Lethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Year	**Number Tested**	**Lkt+[1] B. trehalosi[2]**	**M. haemolytica[3]**	**Lkt+ M. spp.[4]**	**P. multocida[5]**	**M. ovi[6]**
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, the capture and transport of family groups (adult females accompanied by young of the year) would occur when possible. Since previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for goats orphaned during translocation, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing them without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain

goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts in Olympic National Park (2018–19), as they have translocated hundreds of mountain goats. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in

locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment?

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of “specific conservation measures” the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states “given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…” The conservation measures this sentence refers to are found on pages 22–25 in the mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave national parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified. The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species' partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants,

impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

Mountain goats wallow in particularly sensitive soils - high elevation, very shallow, readily disturbed with a short growing season; therefore, colonization is slow. The mountain goats are also known to use the same winter sites for many years so repeated disturbance damages soils.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because

a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (see response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park?

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside of the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a response is not anticipated. In mid-winter, the wolverine is the species most likely to be present

in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

Re_ Acting RD Title Change for FONSI(1).pdf

From: Rice, Heather
To: Noon, Daniel
Subject: Re: Acting RD Title Change for FONSI
Date: Thursday, September 26, 2019 8:49:05 AM
Attachments: GRTE Mountain Goat Management Plan FONSI [Superintendent Signed 2019-09-16 Updated]Edited 92619.docx

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Hi Daniel,

Here's the edited version using track changes. I'll call you in a minute to explain the changes and get your concurrence to move ahead. FYI, I decided not to drop comment 14, but added some explanatory language instead - see what you think.

H
****

Heather Rice
NEPA Specialist, Environmental Quality Division
National Park Service Regional Office Serving Department of Interior Regions 5,6,7,8 & 9
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Have you seen the 2015 NPS NEPA Handbook??
Click here to check it out!

Plato on NEPA: "The beginning is the most important part of the work."

On Thu, Sep 26, 2019 at 8:14 AM Rice, Heather <heather_rice@nps.gov> wrote:

> Thanks! I'll make the changes right now, send them back to you so you can see, then call you to go over to make sure you're ok with them, then off to the RD (Kate Hammond is acting so it'll go to her...not sure if she'll sign or wait for Chip).
>
> H
> **********
>
> Heather Rice
> NEPA Specialist, Environmental Quality Division
> National Park Service Regional Office Serving Department of Interior Regions 5,6,7,8 & 9
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> *Have you seen the 2015 NPS NEPA Handbook??*
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>
> Plato on NEPA: "The beginning is the most important part of the work."
>
> On Thu, Sep 26, 2019 at 8:01 AM Noon, Daniel <daniel_noon@nps.gov> wrote:
>
>> Hi Heather,
>>
>> Here is the Word version of the latest FONSI, as requested. Thank you for the update and

routing the decision to the RD.

Have a great day!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Thu, Sep 26, 2019 at 7:08 AM Rice, Heather <heather_rice@nps.gov> wrote:

Hi Dan,

Dan, Patrick and Amy all reviewed this FONSI concurrently and I received comments yesterday. There are a few small edits that are needed, but I can make them if you send me the last version in Word (the 9/17 version in which you removed the reference to the errata in comment #30). Once I've made those changes, the FONSI will go directly to the RD (I'm told Chip returns to the office on Monday).

Thanks!

Heather
****

Heather Rice
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On Mon, Sep 23, 2019 at 3:07 PM Rice, Heather <heather_rice@nps.gov> wrote:

Thank you, Daniel! And, again, I'm sorry about that last-minute change. Starting today, the FONSI will be routed in the following order (note that Dan and Patrick will be reviewing at the same time):

1. Dan Niosi, REC and also acting this week as Chief of Planning and Compliance (normally Jeremy Sweat)
2. Patrick Malone, Assistant Regional Director, Natural Resources
3. Amy Cole, Acting Associate Regional Director for Resource Stewardship and Science
4. Chip Jenkins, Acting Regional Director

I've marked this urgent and have asked for an RD signature date of Monday, Sept 30th, if at all possible, in order to start implementing the plan this fall. I'll track this closely and will let you know each time it moves past one of the sur-namers on its way to the RD, as well as when it lands on the RD's desk.

Cheers,
Heather
****

Heather Rice
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Plato on NEPA: "The beginning is the most important part of the work."

On Mon, Sep 23, 2019 at 1:23 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

Hi Heather,

Thank you for providing the updated Regional Director signature title. Attached is the updated Mountain Goat Management Plan FONSI.

The park is anticipating a review and decision on the FONSI by the end of the month. Please inform me on the status of the FONSI as it moves through the routing process. I greatly appreciate it!

Thanks again!

Daniel Noon
Chief of Planning and Environmental Compliance
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(307) 739-3465
Email: daniel_noon@nps.gov

On Mon, Sep 23, 2019 at 12:59 PM Rice, Heather <heather_rice@nps.gov> wrote:

Change title to:

Acting Regional Director, National Park Service Regional Office
Serving Department of Interior Regions 5, 6, 7, 8, & 9

****

Heather Rice

NEPA Specialist, Environmental Quality Division
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GRTE Mountain Goat Management Plan FONSI [Sup_1.pdf

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director, National Park Service Regional Office
Serving Department of Interior Regions 5, 6, 7, 8, & 9

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or ~~significantly~~ substantially reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) to rapidly remove non-native mountain goats from the park by lethal and non-lethal (live capture and translocation) removal methods with modifications to include the use of qualified volunteers to assist in lethal removal activities, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to reduce non-native mountain goats within the park using lethal and non-lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within areas managed as wilderness.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and

other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; (3) the field conditions present to successfully transport carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat. Although the donation of the mountain goat carcasses was not analyzed in the EA, it does not change the environmental impacts described in the EA.

Management Framework

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible by lethal and non-lethal methods. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to monitoring and removal, which will occur year round as needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park from any direction and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

Lethal Removal

Mountain goats will be dispatched using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct (use of firearms) lethal removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized on site. Animals will be dispatched by trained personnel following established and approved guidelines from the American Veterinary Medical Association (AVMA).

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based lethal removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are

unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

Use of Qualified Volunteers

The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the “Use of Volunteers for Wildlife Management in Parks,” and Director’s Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Non-Lethal Removal (Live Capture and Translocation)

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Mountain goats could be captured and translocated over the course of 1−5 years primarily between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to when lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and likely to be in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture

efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

Live capture operations could occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the AVMA. After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park.

Artificial Baits

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

Helicopters and Firearms

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

Carcass Disposal

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

Temporary Closures

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

Mountain Goat Monitoring

As needed to monitor or improve the success of control efforts, monitoring activities will include fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. It may be necessary to temporarily capture (helicopter-based), radio-collar and/or mark with paint goats prior to releasing them for the purpose of tracking them to a more suitable location and/or time for removal.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

If mountain goats are captured and released, park-specific capture protocols approved by the NPS veterinarian will be followed. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured in any season. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

Education and Interpretation

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

Wilderness Character Monitoring

Park wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

Cooperation with Land and Wildlife Managers

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two

hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

National Historic Preservation Act

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

Endangered Species Act

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species list~~ed~~ from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

Tribal Consultations

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identify ten criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils (including whitebark pine), and wilderness character; however, no potential for significant adverse impacts was identified.

Bighorn Sheep

Implementing the selected alternative may cause short-term (several minutes to hours) disruptions of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to the bighorn sheep population will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

~~Overall, the effects of the selected alternative are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats.~~ When the adverse and beneficial effects of selected alternative are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not

addressed by this plan, the benefit expected from implementing the selected alternative will not significantly change the overall cumulative adverse impact on bighorn sheep.

Vegetation and Soils

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work may lead to some impact on soils and vegetation where mountain goats are present as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. It's expected these flight operations will occur ≤ 25 days per year, with ≤ 10 landings annually. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures may affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently

baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2) (c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g., propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park cultural resource specialist will be contacted for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2 individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place).

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored as needed and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.

- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
    - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
    - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.
    - All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4) is revised by removing a reference to "tall forbs:"

> Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

> This condition removes native vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination of Lethal and Non-Lethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Year	**Number Tested**	**Lkt+[1] B. trehalosi[2]**	**M. haemolytica[3]**	**Lkt+ M. spp.[4]**	**P. multocida[5]**	**M. ovi[6]**
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, the capture and transport of family groups (adult females accompanied by young of the year) would occur when possible. Since previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for goats orphaned during translocation, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing them without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain

goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts in Olympic National Park (2018–19), as they have translocated hundreds of mountain goats. No holding or processing facilities are anticipated; as noted on page 17 of the EA, captured mountain goats will be transported by helicopter to frontcountry staging areas, where they will be transferred to approved recipients. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the

ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several

modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment~~?~~.

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of “specific conservation measures” the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states “given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…” The conservation measures this sentence refers to are found on pages 22–25 in the

mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave ~~national~~ National ~~parks~~ Parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified. The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others

suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species' partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants, impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

Mountain goats wallow in particularly sensitive soils - high elevation, very shallow, readily disturbed with a short growing season; therefore, colonization is slow. The mountain goats are also known to use the same winter sites for many years so repeated disturbance damages soils.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (see response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park~~?~~.

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside of the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a response is not anticipated. In mid-winter, the wolverine is the species most likely to be present

in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. It's expected these flight operations will occur ≤ 25 days per year, with ≤ 10 landings annually. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

Re_ Acting RD Title Change for FONSI.pdf

From:	Rice, Heather
To:	Noon, Daniel
Subject:	Re: Acting RD Title Change for FONSI
Date:	Thursday, September 26, 2019 9:34:01 AM
Attachments:	GRTE Mountain Goat Management Plan FONSI [Superintendent Signed 2019-09-16 Updated]Edited 92619clean.docx GRTE Mountain Goat Management Plan FONSI [Superintendent Signed 2019-09-16 Updated]Edited 92619.docx

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The FONSI is on Kate Hammond's desk. Again, she may sign as acting RD or she may choose to wait until Chip returns on Monday. I'll let you know as soon as I know anything.

I've attached the revised FONSI fyi (track changes and clean versions). Thanks for your help this morning!

Cheers,
Heather
****

Heather Rice
NEPA Specialist, Environmental Quality Division
National Park Service Regional Office Serving Department of Interior Regions 5,6,7,8 & 9
12795 West Alameda Parkway | Denver, CO 80228
303-969-2975 office | 303-969-2717 fax
heather_rice@nps.gov | IMR-EQ Sharepoint Site

Have you seen the 2015 NPS NEPA Handbook??
Click here to check it out!

Plato on NEPA: "The beginning is the most important part of the work."

On Thu, Sep 26, 2019 at 8:48 AM Rice, Heather <heather_rice@nps.gov> wrote:

> Hi Daniel,
>
> Here's the edited version using track changes. I'll call you in a minute to explain the changes and get your concurrence to move ahead. FYI, I decided not to drop comment 14, but added some explanatory language instead - see what you think.
>
> H
> **********
>
> Heather Rice
> NEPA Specialist, Environmental Quality Division
> National Park Service Regional Office Serving Department of Interior Regions 5,6,7,8 & 9
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>
> *Have you seen the 2015 NPS NEPA Handbook??*
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>
> Plato on NEPA: "The beginning is the most important part of the work."

On Thu, Sep 26, 2019 at 8:14 AM Rice, Heather <heather_rice@nps.gov> wrote:

Thanks! I'll make the changes right now, send them back to you so you can see, then call you to go over to make sure you're ok with them, then off to the RD (Kate Hammond is acting so it'll go to her...not sure if she'll sign or wait for Chip).

H
****

Heather Rice
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On Thu, Sep 26, 2019 at 8:01 AM Noon, Daniel <daniel_noon@nps.gov> wrote:

Hi Heather,

Here is the Word version of the latest FONSI, as requested. Thank you for the update and routing the decision to the RD.

Have a great day!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Thu, Sep 26, 2019 at 7:08 AM Rice, Heather <heather_rice@nps.gov> wrote:

Hi Dan,

Dan, Patrick and Amy all reviewed this FONSI concurrently and I received comments yesterday. There are a few small edits that are needed, but I can make them if you send me the last version in Word (the 9/17 version in which you removed the reference to the errata in comment #30). Once I've made those changes, the FONSI will go directly to the RD (I'm told Chip returns to the office on Monday).

Thanks!

Heather
****

Heather Rice

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On Mon, Sep 23, 2019 at 3:07 PM Rice, Heather <heather_rice@nps.gov> wrote:

Thank you, Daniel! And, again, I'm sorry about that last-minute change. Starting today, the FONSI will be routed in the following order (note that Dan and Patrick will be reviewing at the same time):

1. Dan Niosi, REC and also acting this week as Chief of Planning and Compliance (normally Jeremy Sweat)
2. Patrick Malone, Assistant Regional Director, Natural Resources
3. Amy Cole, Acting Associate Regional Director for Resource Stewardship and Science
4. Chip Jenkins, Acting Regional Director

I've marked this urgent and have asked for an RD signature date of Monday, Sept 30th, if at all possible, in order to start implementing the plan this fall. I'll track this closely and will let you know each time it moves past one of the sur-namers on its way to the RD, as well as when it lands on the RD's desk.

Cheers,
Heather
****

Heather Rice
NEPA Specialist, Environmental Quality Division
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Plato on NEPA: "The beginning is the most important part of the work."

On Mon, Sep 23, 2019 at 1:23 PM Noon, Daniel <daniel_noon@nps.gov> wrote:

Hi Heather,

Thank you for providing the updated Regional Director signature title. Attached is the updated Mountain Goat Management Plan FONSI.

The park is anticipating a review and decision on the FONSI by the end of the month. Please inform me on the status of the FONSI as it moves through the routing process. I greatly appreciate it!

Thanks again!

Daniel Noon
Chief of Planning and Environmental Compliance
Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
(307) 739-3465
Email: daniel_noon@nps.gov

On Mon, Sep 23, 2019 at 12:59 PM Rice, Heather <heather_rice@nps.gov> wrote:

> Change title to:
>
> Acting Regional Director, National Park Service Regional Office
> Serving Department of Interior Regions 5, 6, 7, 8, & 9
>
> **********
>
> Heather Rice
> NEPA Specialist, Environmental Quality Division
> National Park Service Regional Office Serving Department of Interior Regions 5,6,7,8 & 9
> 12795 West Alameda Parkway | Denver, CO 80228
> 303-969-2975 office | 303-969-2717 fax
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>
> *Have you seen the 2015 NPS NEPA Handbook??*
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>
> Plato on NEPA: "The beginning is the most important part of the work."

GRTE Mountain Goat Management Plan FONSI [Sup_2.pdf

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director, National Park Service Regional Office
Serving Department of Interior Regions 5, 6, 7, 8, & 9

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or substantially reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) to rapidly remove non-native mountain goats from the park by lethal and non-lethal (live capture and translocation) removal methods with modifications to include the use of qualified volunteers to assist in lethal removal activities, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to reduce non-native mountain goats within the park using lethal and non-lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within areas managed as wilderness.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and

other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; (3) the field conditions present to successfully transport carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat. Although the donation of the mountain goat carcasses was not analyzed in the EA, it does not change the environmental impacts described in the EA.

Management Framework

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible by lethal and non-lethal methods. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to monitoring and removal, which will occur year round as needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park from any direction and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

Lethal Removal

Mountain goats will be dispatched using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct (use of firearms) lethal removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized on site. Animals will be dispatched by trained personnel following established and approved guidelines from the American Veterinary Medical Association (AVMA).

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based lethal removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are

unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

Use of Qualified Volunteers

The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the “Use of Volunteers for Wildlife Management in Parks,” and Director’s Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Non-Lethal Removal (Live Capture and Translocation)

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Mountain goats could be captured and translocated over the course of 1−5 years primarily between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to when lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and likely to be in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture

efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

Live capture operations could occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the AVMA. After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park.

Artificial Baits

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

Helicopters and Firearms

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

Carcass Disposal

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

Temporary Closures

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

Mountain Goat Monitoring

As needed to monitor or improve the success of control efforts, monitoring activities will include fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. It may be necessary to temporarily capture (helicopter-based), radio-collar and/or mark with paint goats prior to releasing them for the purpose of tracking them to a more suitable location and/or time for removal.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

If mountain goats are captured and released, park-specific capture protocols approved by the NPS veterinarian will be followed. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured in any season. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

Education and Interpretation

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

Wilderness Character Monitoring

Park wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

Cooperation with Land and Wildlife Managers

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two

hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

National Historic Preservation Act

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

Endangered Species Act

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species list from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

Tribal Consultations

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identify ten criteria for determining whether the selected action will have a significant impact on the human

environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils (including whitebark pine), and wilderness character; however, no potential for significant adverse impacts was identified.

Bighorn Sheep

Implementing the selected alternative may cause short-term (several minutes to hours) disruptions of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to the bighorn sheep population will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

When the adverse and beneficial effects of selected alternative are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed by this plan, the benefit expected from implementing the selected alternative will not significantly change the overall cumulative adverse impact on bighorn sheep.

Vegetation and Soils

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work may lead to some impact on soils and vegetation where

mountain goats are present as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. It’s anticipated these flight operations will occur ≤ 25 days per year, with ≤ 10 landings annually. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures may affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve

human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2) (c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g., propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park cultural resource specialist will be contacted for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2 individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place).

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored as needed and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.

- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
    - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
    - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.
    - All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4) is revised by removing a reference to "tall forbs:"

> Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

> This condition removes native vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination of Lethal and Non-Lethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Year	**Number Tested**	**Lkt+[1] B. trehalosi[2]**	**M. haemolytica[3]**	**Lkt+ M. spp.[4]**	**P. multocida[5]**	**M. ovi[6]**
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, the capture and transport of family groups (adult females accompanied by young of the year) would occur when possible. Since previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for goats orphaned during translocation, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing them without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain

goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts in Olympic National Park (2018–19), as they have translocated hundreds of mountain goats. No holding or processing facilities are anticipated; as noted on page 17 of the EA, captured mountain goats will be transported by helicopter to frontcountry staging areas, where they will be transferred to approved land-based transport. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the

ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several

modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment.

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of “specific conservation measures” the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states “given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…” The conservation measures this sentence refers to are found on pages 22–25 in the

mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave National Parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified. The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species' partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants, impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

Mountain goats wallow in particularly sensitive soils - high elevation, very shallow, readily disturbed with a short growing season; therefore, colonization is slow. The mountain goats are also known to use the same winter sites for many years so repeated disturbance damages soils.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to

protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (see response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park.

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the

plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside of the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a response is not anticipated. In mid-winter, the wolverine is the species most likely to be present

in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. It’s anticipated these flight operations will occur ≤ 25 days per year, with ≤ 10 landings annually. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

GRTE Mountain Goat Management Plan FONSI [Sup_4.pdf

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

Gopaul Noojibail — Date
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Approved:

Palmer L. Jenkins — Date
Acting Regional Director, National Park Service Regional Office
Serving Department of Interior Regions 5, 6, 7, 8, & 9

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or ~~significantly~~ substantially reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) to rapidly remove non-native mountain goats from the park by lethal and non-lethal (live capture and translocation) removal methods with modifications to include the use of qualified volunteers to assist in lethal removal activities, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to reduce non-native mountain goats within the park using lethal and non-lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within areas managed as wilderness.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and

other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; (3) the field conditions present to successfully transport carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat. Although the donation of the mountain goat carcasses was not analyzed in the EA, it does not change the environmental impacts described in the EA.

Management Framework

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible by lethal and non-lethal methods. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to monitoring and removal, which will occur year round as needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park from any direction and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

Lethal Removal

Mountain goats will be dispatched using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct (use of firearms) lethal removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized on site. Animals will be dispatched by trained personnel following established and approved guidelines from the American Veterinary Medical Association (AVMA).

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based lethal removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are

unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

Use of Qualified Volunteers

The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the “Use of Volunteers for Wildlife Management in Parks,” and Director’s Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Non-Lethal Removal (Live Capture and Translocation)

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Mountain goats could be captured and translocated over the course of 1−5 years primarily between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to when lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and likely to be in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture

efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

Live capture operations could occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the AVMA. After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park.

Artificial Baits

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

Helicopters and Firearms

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

Carcass Disposal

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

Temporary Closures

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

Mountain Goat Monitoring

As needed to monitor or improve the success of control efforts, monitoring activities will include fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. It may be necessary to temporarily capture (helicopter-based), radio-collar and/or mark with paint goats prior to releasing them for the purpose of tracking them to a more suitable location and/or time for removal.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

If mountain goats are captured and released, park-specific capture protocols approved by the NPS veterinarian will be followed. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured in any season. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

Education and Interpretation

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

Wilderness Character Monitoring

Park wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

Cooperation with Land and Wildlife Managers

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two

hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

National Historic Preservation Act

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

Endangered Species Act

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species list~~ed~~ from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

Tribal Consultations

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identify ten criteria for determining whether the selected action will have a significant impact on the human environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils (including whitebark pine), and wilderness character; however, no potential for significant adverse impacts was identified.

Bighorn Sheep

Implementing the selected alternative may cause short-term (several minutes to hours) disruptions of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to the bighorn sheep population will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

~~Overall, the effects of the selected alternative are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats.~~ When the adverse and beneficial effects of selected alternative are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not

addressed by this plan, the benefit expected from implementing the selected alternative will not significantly change the overall cumulative adverse impact on bighorn sheep.

Vegetation and Soils

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work may lead to some impact on soils and vegetation where mountain goats are present as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. It's anticipated these flight operations will occur ≤ 25 days per year, with ≤ 10 landings annually. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures may affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently

baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2) (c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g., propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park cultural resource specialist will be contacted for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2 individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place).

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored as needed and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.

- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
    - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
    - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.
    - All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4) is revised by removing a reference to "tall forbs:"

> Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

> This condition removes native vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination of Lethal and Non-Lethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, the capture and transport of family groups (adult females accompanied by young of the year) would occur when possible. Since previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for goats orphaned during translocation, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing them without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain

goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts in Olympic National Park (2018–19), as they have translocated hundreds of mountain goats. No holding or processing facilities are anticipated; as noted on page 17 of the EA, captured mountain goats will be transported by helicopter to frontcountry staging areas, where they will be transferred to approved land-based transport. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the

ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several

modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment~~?~~.

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of “specific conservation measures” the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states “given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…” The conservation measures this sentence refers to are found on pages 22–25 in the

mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave ~~national~~ National ~~parks~~ Parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified. The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others

suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species' partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants, impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

Mountain goats wallow in particularly sensitive soils - high elevation, very shallow, readily disturbed with a short growing season; therefore, colonization is slow. The mountain goats are also known to use the same winter sites for many years so repeated disturbance damages soils.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to

protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (see response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park~~?~~.

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the

plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside of the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a response is not anticipated. In mid-winter, the wolverine is the species most likely to be present

in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. It's anticipated these flight operations will occur ≤ 25 days per year, with ≤ 10 landings annually. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

MOGO Comms Plan.pdf

From:	Germann, Denise
To:	Sue Consolo-Murphy; David Gustine; Dewey, Sarah
Subject:	MOGO Comms Plan
Date:	Friday, October 4, 2019 3:08:08 PM
Attachments:	Communications Plan Mtn Goat Management Plan FONSI8.2019.docx

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We will release info about MOGO FONSI on Tuesday Oct 15 or Wednesday, Oct 16.

Attached is the comms plan- including the contacts we each have. You can communicate to these folks next week, if you haven't already. Please let them know that public comms will be the week of Oct 14 and appreciate them respecting our comms timeline- and this heads up to them is not for public release at this time.

Please note that the FAQs still need something about qualified volunteers and meat distribution. I will add that.

I am out of the office next week- so that adjusts our comms schedule- as did special events this week.

Thanks.

Denise

Denise Germann
Public Affairs Officer
Grand Teton National Park
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Communications Plan Mtn Goat Management Plan _3.pdf

Communications Plan

Grand Teton National Park &
John D. Rockefeller, Jr.
Memorial Parkway

Mountain Goat Management
Plan/Environmental Assessment

Public Release of Environmental
Assessment/FONSI
9/2019

For Internal Discussion Only
Do Not Distribute

Communications Plan

GRTE/JODR-Mountain Goat Management Plan

This plan establishes a framework for communication with park staff, neighbors, stakeholders, local communities, elected officials, and the general public during release of the Draft Mountain Goat Management Plan/Environmental Assessment (EA) and FONSI.

Issue Background

Mountain goats are not native to Grand Teton National Park and the Teton Range. The goat population that currently resides in the Teton Range likely dispersed from a population introduced in the Snake River Range by the Idaho Department of Fish and Game roughly 20 miles south of the Park more than 45 years ago. The population of mountain goats is growing at a rapid rate and beginning to expand into habitats important to a native population of bighorn sheep whose status is very tenuous. Management of mountain goats is needed to address the impacts that mountain goats could impose on natural resources within the park, particularly to the native bighorn sheep population.

In 2013, the park began developing a management plan for mountain goats and concurrently initiated the environmental compliance process. The preferred alternative identified in the EA, calls for the translocation of as many goats as can be captured. Remaining goats would be lethally removed using contracted or government-employed staff.

Objectives

This plan is intended to guide strategic communications about management of nonnative mountain goats within the park during the release of the Draft Mountain Goat Plan/EA, FONSI and implementation of the final plan.

The objectives of this plan are to:

- Identify key messages to share with the public and other interested parties regarding the current population status of native bighorn sheep and nonnative mountain goats in the park and actions proposed/decided in the EA and FONSI;
- Identify key tasks and timelines to complete those tasks with the goal of releasing the Draft plan/EA and FONSI;
- Identify roles and responsibilities for completing tasks identified on the timeline.

The expected outcomes of this strategic communications plan are:

1. Enhanced public understanding of the threat nonnative mountain goats present to native Teton Range bighorn sheep population;
2. Enhanced public understanding of NPS management policies that support the removal of nonnative mountain goats;
3. Open and transparent communications with the public regarding proposed management actions (including lethal removal of mountain goats);

Key Messages:

- Mountain goats are not native to Grand Teton National Park.
- The park has a responsibility to protect native species and reduce the potential for local extinction of a native species.
- As of early 2018, the mountain goat population within the park was estimated be around 100 individuals.
- The Teton Range is home to a small, native population of bighorn sheep whose status is tenuous.
- Due in part to its small size, the Teton Range bighorn sheep herd exhibits low genetic diversity and is genetically isolated from neighboring herds.
- Currently the bighorn sheep population is estimated at about 80 individuals. Prior to 2015, the population was estimated to be approximately 100-125 individuals.
- The potential for resource competition and pathogen transmission between mountain goats and bighorn sheep is expected to increase.
- Without active management the mountain goat population is expected to continue to grow and expand its distribution within the park.
- The rapid reduction of the park's mountain goat population is vital for the continued existence of the Teton Range bighorn sheep herd.

Talking Points:

- Action is needed now because:
    - A breeding population of nonnative mountain goats is established in the park. The presence of mountain goats presents threats to the already stressed native bighorn sheep herd through increased risk of pathogen transmission and competition.
- Without immediate intervention, the mountain goat population is expected to grow rapidly and expand into habitats important to bighorn sheep within the park.
- Recent monitoring suggests this bighorn herd has undergone a recent population decline and is facing multiple environmental stressors that put its future in question. The sheep herd has never been extirpated and repopulated, or augmented. This local bighorn sheep herd is of high conservation value to the park, adjacent land and wildlife managers, and visitors. It is important that a healthy population of this native species is present and persists within the park.
- Reduction and elimination of the mountain goats will be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats.
- The mountain goat population is currently at a size where complete removal is achievable in a short time frame; however, the apparent growth rate of this population suggests that complete removal in the near future may become unattainable after a period of about three years.
- Based on analysis and public comments the decision is to rapidly remove non-native mountain goats from the park by live capture, relocation and lethal means with modifications to include the use of qualified volunteers for certain tasks and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. (added to assist NPS in management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management and Recreation Act)
- The draft plan and EA described and analyzed three alternatives:
    - **No action:** mountain goat population monitoring would continue, but no active population reduction would occur, except if needed to address a human safety concern.

- **Lethal and non-lethal removal (preferred alternative):** a combination of capture and translocation, and lethal removal methods would be used to reduce the mountain goat population within the park.
- **Lethal removal:** mountain goats would be lethally removed from the park using a variety of aerial and ground-based techniques.

- The National Park Service appreciates the support of Wyoming Game and Fish Department in efforts to conserve the native Teton Bighorn Sheep Population.

Timeline

Task	Primary Responsibility	Date to Complete/Implement
Send FONSI for IMR for review.	Daniel Noon	
Inform state wildlife management agency staff of anticipated release of the FONSI.	Sue Consolo-Murphy	
IMR Weekly Report	Denise Germann	August 14
Obtain signature from regional director	Daniel Noon/RD	September
Implement comms plan- communicate with key contacts and internal/external publics	Daniel Noon Denise Germann	Media release, phone calls, email, meetings
		November 6
Aviation request, contract, and project aviation safety plan	Sarah Dewey	Winter 2019/2020
Internal and external implementation outreach efforts	Sarah Dewey	Fall/Winter2019
Begin plan implementation	Sarah Dewey	Winter 2019

Key Contacts and Communication Tools to Share Information

Key Contact/Stakeholder	Contact Info	Staff Assigned	Notification Tool	Timeline
IMR Weekly Report		Denise Germann	Weekly Report Submission	August 14
GRTE Senior Leadership Team		Sue Consolo-Murphy	SLT Meeting	
Park Employees/Volunteers	GRTE_All_Employees	Denise Germann	Email, FAQs, Media Release	
IMR Key Contacts	Kristin Public/Gov Affairs-Marco Deleon	Sue Consolo-Murphy/Dave Gustine Denise Germann	Phone call, email media release	Gustine forward media release by email
WASO Key Contacts	Ray Sovenough Comms-Jeremy Barnum	Sue Consolo-Murphy Denise Germann	Phone call, email media release	

Grand Teton Association	April Landale	Denise Germann	Media release	
Grand Teton National Park Foundation	Leslie Mattson	Denise Germann	Media release	
Park Concessioners		Mallory Smith/Billy Bryan	Media release email	
Park CUA Holders		Mallory Smith/Tracey	Media release email	
General Public/Media		Denise Germann	Media release, Social Media Posts	
WY Game and Fish	Brian Nesvik Brad Hovinga Scott Edberg Doug and Allie Mark Goeke	Sue Consolo-Murphy/Dave Gustine/Sarah Dewey Denise Germann	Meeting, Phone Call, email Media release	Contact prior to release
Bridger-Teton National Forest	Tricia O'Connor Randy Gribel Mary Cernacek	Sue Consolo-Murphy/Dave Gustine Denise Germann	Phone call, email media release	Contact prior to release
Caribou-Targee National Forest	Forest Supervisor Wildlife Biologist Nate PAO	Sue Consolo-Murphy/Sarah Dewey Denise Germann	Phone call, email media release	Contact prior to release
NRSS	Mike Rigley	Sue Consolo-Murphy/Dave Gustine	Phone call, email media release	Contact prior to release
Wyoming Wild Sheep Foundation	Steve Kilpatrick	Sue Consolo-Murphy/Sarah Dewey	Phone call, email media release	
National Sheep Foundation	Grey Thorton	Sue Consolo-Murphy/Sarah Dewey	Email, media release	Email address-Sarah?
Idaho Fish and Game	Curtis Hendricks Jim Holly Miyaski	Sue Consolo-Murphy/Dave Gustine/Sarah Dewey	Phone call, email media release	Call prior to release
Local Sierra Club	Llyod Dorsey	Denise Germann	Email media release	
Wilderness Society		Denise Germann	Email media release	Daniel- need email address?
Teton Backcountry Alliance	Josh Mitten	Sue Consolo-Murphy/Sarah Dewey	Email media release	
Greater Yellowstone Coalition	Chris Colligan	Sue Consolo-Murphy/Dave Gustine	Email media release	

Jackson Hole Conservation Alliance	Sky Shell	Denise Germann	Email media release	Need email address?
Jackson Hole Wildlife Foundation	John Moback	Sue Consolo-Murphy	Phone call, email media release	
National Sheep Interpretive Center	SarahDomeck	Denise Germann	Email media Release	
WY Game and Fish Wildlife Commissioner	Mike Schmidt	Sue Consolo-Murphy/Dave Gustine	Phone call, email media release	Prior to release
EA Comments		Daniel Noon Denise Germann	Email media release	Email list from Daniel
US Fish and Wildlife Service	Tyler Abbott	Denise Germann	Email media release	Email address from Sarah?
Yellowstone NP	Jennifer Carpenter	Sue Consolo-Murphy	Phone call, email media release	
Yellowstone NP	Strategic Comms Jody Lyle Morgan Warthin	Denise Germann	Email media release	
Teton County Commissioners	Natalia Macker nmacker@tetoncountywy.gov Mark Newcomb mnewcomb@tetoncountywy.gov Greg Epstein gepstein@tetoncountywy.gov Luther Probst lpropst@tetoncountywy.gov Mark Barron mbarron@tetoncountywy.gov All Commissioners commissioners@tetoncountywy.gov	Denise Germann	Media release	Check open house attendees- call Mark and Natalia
Town of Jackson	Mayor Pete Muldoon Jim Stanford Don Frank Hailey Morton Levinson Arne Jorgensen Jonathan Schechter PIO- Carl Pelletier electedofficials@townofjackson.com	Denise Germann	Media release	
Congressional Delegation	Senator Barrasso Pam Buline Pam_buline@barrasso.sentate.gov	Denise Germann	Phone call, email media release	

	Senator Enzi Nikki Brunner Nikki_Brunner@enzi.senate.gov Representative Cheney Lindy.Linn@mail.house.gov			
WY State	Representative Jim Roscoe Jim.Roscoe@wyoleg.gov Representative Mike Yin Mike.Yin@wyoleg.gov Representative Andy Schwartz Andy.Schwartz@wyoleg.gov Senator Dan Dockstader Dan.Dockstader@wyoleg.gov Senator Mike Gierau Mike.Gierau@wyoleg.gov	Denise Germann	Email media release	
Governor's Office	Michael Pearlman Resource Staff?	Denise Germann	Phone call, media release	
Tribal Representatives		Sue Consolo-Murphy	Letter, email	

Grand Teton National Park
Mountain Goat Management Plan
Frequently Asked Questions (FAQs)

What is this mountain goat plan and why is it needed?
The purpose of the plan is to allow the NPS to reduce or eliminate impacts to park resources from exotic mountain goats, while improving the long-term survival prospects for the native Teton Range bighorn sheep population. Management of mountain goats is needed to address the impacts that mountain goats could impose on natural resources within the park, particularly to sensitive alpine and subalpine vegetation communities and a native bighorn sheep population whose status is tenuous.

What effects are nonnative mountain goats having on the Teton Range native bighorn sheep population?
Competition
Mountain goats from the source population in the Snake River Range have been documented to carry *Mycoplama ovipneumonia* and (how many pasteurellas??) which are known to cause fatal pneumonia outbreaks in bighorn sheep (citation). In addition, disease testing of the mountain goats in the Teton Range indicates that these goats carry at least ## pathogens which can contribute to pneumonia. To date, with limited sampling, two of these pathogens have also been detected in the bighorn sheep herd, but a third (B. trehalosi) has not. An estimate of the exact risk, the mountain goat present to the struggling bighorn sheep population cannot be determined. However, exchange of pathogens and subsequent disease manifestation has been documented between mountain goats and bighorn sheep (provide citation) and wildlife professionals agree that the unquantified level of pathogen transmission risk between the species warrants a proactive management approach. As the mountain goat population continues to grow and expand into areas occupied by bighorn sheep, preventing exposure will become increasingly difficult. Although current exposure risk may be low at this time, the devastating consequences and the lack of tools to mitigate population level effects on bighorn sheep necessitate aggressive and proactive management of the mountain goat population.

What are the alternatives in the EA?

- **No action:** mountain goat population monitoring would continue, but no active population reduction would occur, except if needed to address a human safety concern.
- **Lethal and non-lethal removal (preferred alternative):** a combination of capture and translocation, and lethal removal methods would be used to reduce the mountain goat population within the park.
- **Lethal removal:** mountain goats would be lethally removed from the park using a variety of aerial and ground-based techniques.

Will removing mountain goats be beneficial to bighorn sheep?
The viability of the Teton Range bighorn sheep population is dependent on several variables, including providing secure quality habitat, reducing risk of disease transmission and reducing competition for space and food. Removing mountain goats is a primary action in the continued existence of the Teton Range bighorn sheep herd.

Why can't fertility control be used?
Fertility control would not be effective in meeting the plan/EA objectives for several reasons:

- There is currently no contraceptive approved for use in mountain goats and no effective drug delivery method is available,
- Fertility control would not address the risk that mountain goats present to bighorn sheep from possible disease transmission and competition or address concerns about impacts to vegetation, and
- Fertility control is effective for a limited amount of time and would require multiple applications.

Why can't bighorn sheep be vaccinated to protect them from mountain goat diseases?
There is not an effective vaccine for the diseases of greatest concern. Past researchers have attempted to develop vaccines for bighorn sheep, but none have been effective. Vaccine development is extremely expensive and unless wildlife diseases threaten humans or livestock, insufficient funds are available for vaccine development. If an effective vaccine existed, delivering it to a sufficient number of the Park's bighorn sheep would not be feasible because the animals spend the entire year in inaccessible areas.

Why can't the park allow bighorn sheep and mountain goats co-exist in the Tetons?
Bighorn sheep and mountain goats do co-exist as native species in parts of North America. Under different circumstances the Park might consider allowing non-native mountain goats to remain in the Tetons, however, given the perilous status of the Teton Range bighorns the park has a responsibility to act to prevent displacement of the native bighorn sheep population, maintain the ecological role of bighorn sheep, and reduce the potential for local extinction of a species. Research shows that there is high similarity in habitat use between mountain goats and bighorn sheep in the Greater Yellowstone Ecosystem (GYE), which indicates there is also high potential for competition and disease transmission between the two species. Fortunately the full suite of pathogens that cause pneumonia in bighorn sheep have not been found in mountain goats or bighorn sheep in Teton Range. However, these pathogens have been detected in the nearest mountain goat populations to the south and northeast of the Teton Range. Whereas non-native mountain goats in the GYE have continued to colonize new range as their populations grow, neighboring bighorn sheep populations are not expanding their range. It is more likely that pneumonia pathogens will be introduced to the Teton Range by colonizing mountain goats than by bighorn sheep and colonizing mountain goats are more likely to interact with their own species than bighorn sheep. This means that resident mountain goats in the Teton Range will be a reservoir to amplify any pathogens introduced by colonizing mountain goats. Mountain goats will at best have a neutral effect on bighorn sheep in the Tetons and at worst they will facilitate local extinction of one the Park's most iconic native wildlife species.

Why can't the park allow predators to take care of the mountain goat population?
Bears, wolves, mountain lions, eagles, and wolverines are all predators of mountain goats, especially young of the year also called kids. Given that mountain goats live in steep, rocky terrain close to cliffs that predators have difficulty navigating, it is unlikely that any of these species would play a significant role in limiting the mountain goat population. This is especially true where alternate prey such as elk are readily available. This method of control would not be effective in meeting the purpose and need of the plan.

How do you know that goats are not native to the Teton Range?
Several peer-reviewed scientific papers have concluded the distribution of native and introduced populations of mountain goats in North America. Some of these articles have been referenced in the plan/EA.

Where are mountain goats considered a native species?
The native range of mountain goats extends from southeastern Alaska south to the Columbia River in Washington; east into Idaho and western Montana; and north to southern Yukon (http://explorer.natureserve.org/servlet/NatureServe?searchName=oreamnos+americanus; Distribution section).

How did the current mountain goat population end up in the park?

Preliminary analysis of genetic material strongly suggests that the current mountain goat population in the Teton RangeThe goat population that currently resides in the Teton Range likely dispersed from goats introduced in the Snake River Range and the Big Hole Mountains by the Idaho Department of Fish and Game roughly 20 miles south of the southern Park boundary more than 45 years ago. At the time, this was a common practice undertaken by state wildlife management agencies to establish new big game populations for the benefit of hunters. Park biologists are currently working with a wildlife genetics laboratory to confirm the population of origin for the mountain goats in the Tetons.

Why can't bighorn sheep be vaccinated to protect them from mountain goat diseases?
There is not an effective vaccine for the diseases of greatest concern. Past researchers have attempted to develop vaccines for bighorn sheep, but none have been effective. Vaccine development is extremely expensive and unless wildlife diseases threaten humans or livestock, insufficient funds are available for vaccine development. If an effective vaccine existed, delivering it to a sufficient number of the Park's bighorn sheep would not be feasible because the animals spend the entire year in inaccessible areas.

What is the current population of goats in the Teton Range?
Biologists currently estimate about 100 mountain goats reside in the Teton Range.

What are differences in mountain goat management planning between Grand Teton National Park and Yellowstone National Park?
Grand Teton proposes to remove the population of mountain goats that has recently colonized the park. The size of the mountain goat population in the park is still small enough (~100 individuals) that removal could be successful within a discrete time frame. At this time, mountain goat habitat within the Teton Range is distinct from possible source populations to the north and south and biologists do not believe that mountain goats are continually dispersing to the Teton Range from source populations. In contrast, mountain goats have almost completely colonized suitable habitat within Yellowstone National Park. More than 600 mountain goats currently reside in and adjacent to Yellowstone. Roughly 200 goats occur in the northeast and northwest portions of park and continuous habitat occurs along the eastern and western boundaries. Given the continuous distribution of goats adjacent to suitable habitats within the park and the desire by the states of Montana and Wyoming to sustain these populations, mountain goats would likely continue to occupy these habitats and disperse into the park for the foreseeable future. Given these conditions, Yellowstone resource managers have no plans to remove mountain goats in the immediate future. Instead, they are working with state and university partners to evaluate potential impacts of mountain goats on native natural resources.

If the goats are translocated, where would they go?
The precise locations of where goats would be transferred is not known at this time. The NPS would work closely with interested recipients and the Wyoming Game and Fish Department.

How will removal operations impact Wilderness values in the park and adjacent national forest?
Aerial and ground operations would most notably have short-term negative effects on wilderness solitude. Temporary area closures would have an effect on wilderness recreational opportunities. The removal of nonnative mountain goats from wilderness would have a long-term beneficial effect on the natural quality of wilderness (due to removal of a nonnative species). Because the goats live year-round within wilderness there is no way to conduct removals except in wilderness.

How will removal operations impact visitor access and recreation in the park and adjacent national forest?
Temporary area closures during mountain goat removal activities could impact some backcountry and wilderness visitors within Grand Teton National Park. Removal operations would not impact visitors in adjacent national forest lands. To reduce these potential impacts, field activities in backcountry and wilderness areas would occur during periods of minimal visitation as much as possible, and would avoid trails, overlooks, backcountry camping zones, and climbing routes. Signs, alerts, bulletins, press releases, and notifications would be issued to inform visitors of temporary area closures and other management activities.

1. Does the plan consider area closures to protect bighorn sheep habitats?

   The mountain goat management plan is focused on the removal of mountain goats.

2. Why does the park not allow hunters to remove the goats?

   An alternative that involves public hunting within Grand Teton National Park as a tool to manage mountain goats would be inconsistent with existing law and regulatory authority regarding public hunts in National Parks. National Park Service federal regulations states hunting shall be allowed in park areas where such activity is specifically mandated by federal law. Although the 1950 law that created Grand Teton National Park allows for the controlled reduction of elk when necessary for proper management of the herd, public hunting is not authorized in this law.

   At this time there is no hunting of mountain goats within the parkway.

3. Are you considering using skilled volunteers to remove goats?

   The NPS is not considering the use of skilled volunteers to remove mountain goats. apid reduction of the park's mountain goat population is a critical step in reducing the risk of disease transmission and competition between mountain goats and bighorn sheep and improving the chances of sustaining the Teton Range bighorn sheep population. The mountain goat population is currently at a size where complete removal (as described in this plan) is achievable in a short time frame. The potential removal of the small number of goats that may repopulate the area would be better achieved utilizing skilled park staff and contractors. Thus, there would be little benefit in developing and managing a short-term ground-based skilled volunteer program to remove mountain goats.

4. If the plan is approved, when do you propose to begin implementation?

   If the plan is approved, implementation is anticipated to begin as early as late fall or early winter of 2018.

5. What will happen to the goats that are lethally removed?

   Mountain goat carcasses would generally be left on the landscape for scavengers to utilize or to decompose naturally. When possible, carcasses will be kept away from popular visitor-use areas such as trails and campsites. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

22. Why is the park considering lethal removal? Why can't all the goats be removed through live capture?

   Not all goats will be able to be captured - they may occur in areas of the park where the terrain is too challenging for safe capture or they may simply elude capture efforts. Given interest from outside parties and necessary approvals for translocations, it is estimated that approximately 25% of the goats will be live captured and translocated, but the remaining 75% will be removed by lethal means.

DRAFT Media Release- Mtn Goat Plan_EA COMMENTS__.pdf

From: Germann, Denise
To: Sue Consolo-Murphy; William Noon; David Gustine; Dewey, Sarah
Subject: DRAFT Media Release- Mtn Goat Plan/EA COMMENTS??
Date: Monday, October 14, 2019 6:58:03 PM

The National Park Service has signed a Finding of No Significant Impact for the Mountain Goat Management Plan/Environmental Assessment at Grand Teton National Park. The purpose of the plan is twofold; 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous, and 2) protect other park resources and values from the rapidly growing non-native mountain goat population.

Based on analysis in the environmental assessment and public comments, the decision allows the National Park Service to rapidly remove non-native mountain goats from the park by lethal and non-lethal (live capture and translocation) methods. The decision also includes modifications from the preferred alternative to include the use of qualified volunteers to assist in lethal removal activities, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities.

The National Park Service has a responsibility to maintain the ecological role of native species and reduce the potential for local extinction of a species. Mountain goats are not native to Grand Teton National Park. The presence of mountain goats present threats to the already stressed native bighorn sheep herd through increased risk of pathogen transmission and competition.

Currently the nonnative mountain goat population within the park is estimated at approximately 100 animals. Resident mountain goats within the park are likely from a population that was introduced outside the park these nonnative goats is growing rapidly.

The Teton Range within the park is also home to a small herd of approximately 80 native bighorn sheep. Prior to 2015- (new info?), the population was estimated to be approximately 100-125 sheep. This herd is one of the smaller and most isolated in Wyoming, and has never been extirpated or augmented. The Teton Ranger herd of native bighorn sheep is of high conservation value to the park, adjacent land and wildlife managers, and visitors.

Without swift and active management, the mountain goat population is expected to continue to grow and expand its distribution within the park. The mountain goat population is currently at a size where complete removal is achievable in a short time, however, the growth rate of this population suggest that complete removal in the near future may become unattainable after a period of about three years.

Implementation of the plan to remove non-native mountain goats from the park by lethal and non-lethal methods will begin late winter and upcoming spring. Skilled volunteers- obtain meat???

The decision document is available at XXXX.

Denise Germann
Public Affairs Officer
Grand Teton National Park
307 739 3393 Office
307-690-1752 Cell
denise_germann@nps.gov

Re_ [EXTERNAL] RE_ removal of mountain goats in....pdf

From:	Gustine, David
To:	Foster, Michael D - APHIS
Subject:	Re: [EXTERNAL] RE: removal of mountain goats in Grand Teton NP?
Date:	Tuesday, October 22, 2019 7:19:21 AM
Attachments:	Final GRTE MOGO EA 2018-12-03 (accessible).pdf GRTE Mountain Goat Management Plan FONSI (RD Signed 2019-09-27).pdf

---

Mike-

I appreciate the prompt response, especially since you're "catching up" from leave! So thanks for that.

Yea, sorry about ACETA acronym, I forget USDA has their own acronym burden -- ACETA for us also covers eradication, so we have no need for capture and collaring, we got that covered.

NEPA is done (see attached for EA and FONSI), which covers aerial removal and I assume would have APHIS covered as well, but assuming is dangerous.

If after review, this seems worth pursuing, let's catch up on phone on background, timing, cost, etc. For us, cost will be limiting factor really, and I'll pursue the most cost effective approach. Working with another federal agency has it's advantages for sure! With that said, we're looking at some potential helicopter removals to occur Jan-Feb 2020.

thanks again Mike,

dave

On Mon, Oct 21, 2019 at 4:20 PM Foster, Michael D - APHIS <michael.d.foster@usda.gov> wrote:

> Good Afternoon David,
>
> I have been on leave this past week, and working through the mountain of emails. I am just now getting to yours.
>
> This is an interesting project. I would need more information in order to give you a definitive answer. We have never done aerial removal of ungulates in Wyoming before.
>
> Does your NEPA cover other Federal Agencies if we were to do this work? I guess I would have to get a copy and have my folks review it.
>
> Certainly we are capable of lethal aerial work. We have the ability to enter into financial

agreements with other entities including other federal agencies and do on a regular basis. There are several steps that would need to happen, like permits from the State of Wyoming, etc., but there is a chance we could help. We have the expertise to do lethal aerial work and we are exempt from the Federal Airborne Hunting Act.

I do not know the acronym ACETA but I googled it. We would not provide capture, tagging service, this is not our expertise, but might be able to provide the lethal component, you would need to contract with someone else for capture/tagging services. Of course it would have to be full cost recovery plus 28% overhead. If we talk again, and you are interested in pursuing this, I need more info and would have to run something like this up my agency and see if it is even an option. I suspect it will generate significant public disapproval. Our wheel house is protection of agriculture, livestock and human health and safety, but there is a small component of resource protection that this would fit into I believe.

Our availability would depend on the time of year that you hoped to accomplish this task.

Mike D. Foster

State Director-Wyoming

USDA Wildlife Services

PO Box 67

Casper, Wyoming 82602

(307) 261-5336

*****NOTE NEW EMAIL ADDRESS*****

Michael.D.Foster@usda.gov

From: Gustine, David [mailto:dave_gustine@nps.gov]
Sent: Monday, October 21, 2019 7:16 AM
To: Foster, Michael D - APHIS <michael.d.foster@usda.gov>
Subject: removal of mountain goats in Grand Teton NP?

Hi Mike-

My name is Dave Gustine, I'm the Supervisory Wildlife Biologist here at Grand Teton.

We just released a FONSI in regard to management of non-native mountain goats in the park, which includes lethal and non-lethal removal. I'm poking around for our options on aerial removal: we do have the ACETA-certified private contractor route, but and I wanted to check in with you to see if APHIS did full service ACETA contracts for this type of work. If so, I do have a few follow up questions, but I'll save those for the next conversation.

I know your team is just liked the rest of "us", likely too much too do and not enough time, so thanks for your time and thought on this!

Dave

--

_____

Dave Gustine, PhD

Supervisory Wildlife Biologist

Grand Teton National Park

Moose, WY 83012

dave_gustine@nps.gov

307-739-3485

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--

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Final GRTE MOGO EA 2018-12-03 (accessible)_1.pdf

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway

Mountain Goat Management Plan
Environmental Assessment
December 2018

NPS Photo/M. Osipchuk

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CHAPTER 1: Purpose and Need for Action

The Proposal

The National Park Service (NPS) is proposing to implement a plan to remove exotic (nonnative) mountain goats from Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (Figure 1); collectively, the park. The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep (*Ovis canadensis*) whose status is tenuous and 2) protect other park resources and values from the rapidly growing mountain goat population.

Per NPS policy (NPS 2006, sections 4.1.5 and 4.4.4), the park has a responsibility to prevent displacement of a native population by an exotic population, maintain the ecological role of native species, and reduce the potential for local extinction of a species, when feasible.

The removal of mountain goats from the park would be accomplished through the use of lethal and/or non-lethal means. The goal is to remove the mountain goat population as quickly as possible to minimize impacts to native species, ecological communities, and visitors. Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in one to five years.

The NPS Organic Act of 1916 and Management Policies 2006 (NPS 2006, sections 4.1.5 and 4.4.4) support the maintenance and restoration of natural systems and the control of exotic species. The Organic Act directs the National Park Service to conserve resources in their natural condition, leaving them unimpaired for the enjoyment of future generations. NPS Management Policies (section 4.4.4) also states that non-native species will not be allowed to displace native species if this displacement can be prevented. More detail is provided in section 4.4.4.2: "All exotic plant and animal species that are not maintained to meet an identified park purpose will be managed – up to and including eradication – if (1) control is prudent and feasible, and (2) the exotic species…interferes with natural processes and the perpetuation of natural features, native species or natural habitats…" (which is one of seven listed characteristics which indicate management is needed). It further states "High priority will be given to managing exotic species that have, or potentially could have, a substantial impact on park resources, and that can reasonably be expected to be successfully controlled."

Need for the Proposal

Mountain goats are not native to the Greater Yellowstone Ecosystem (GYE; Skinner 1926, Hayden 1989, Laundré 1990, McWhirter and Roop 2007, Flesch et al. 2016), an area that includes the park. The native range of mountain goats extends from southeastern Alaska south to the Columbia River in Washington; east into Idaho and western Montana; and north to southern Yukon (http://explorer.natureserve.org/servlet/NatureServe?searchName=oreamnos+americanus; distribution section; Festa-Bianchet and Côté 2008, Rideout and Hoffman 1975).

Resident mountain goats within the park are likely dispersers from a population introduced southwest of the Teton Range in the late 1960s and early 1970s. First observed in the Teton Range in 1979, they have now established a breeding population that is growing rapidly.

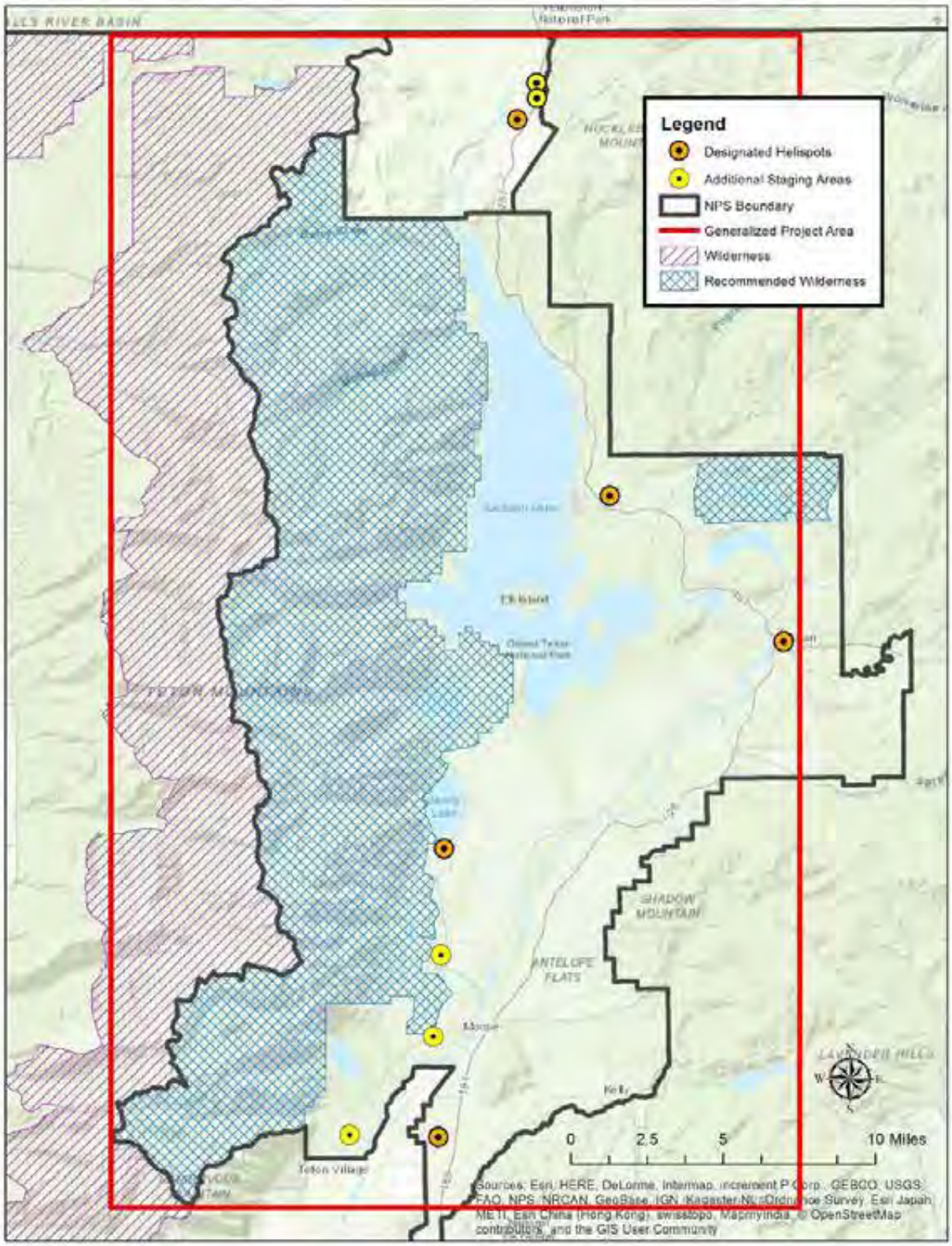

Figure 1. Wilderness areas (designated and recommended, managed as wilderness), staging areas/helispots, and generalized project area (outlined in red), Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway, Wyoming, 2018.

Mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges.

Given the observed high productivity of mountain goats and their growing numbers, the NPS has heightened concerns for the native bighorn sheep population, one of the smallest and most isolated in Wyoming, and is committed to ensuring the herd's long-term persistence. Recent monitoring suggests this bighorn herd has undergone a recent population decline (Wyoming Game and Fish Department (WGFD) 2009−2016) and is facing multiple environmental stressors that put its future in question. The bighorn sheep herd has never been extirpated and repopulated or augmented. Consequently, it is of high conservation value to the park, adjacent land and wildlife managers, and visitors whom enjoy knowing that a healthy population of this native species is present and persists within the park.

Without intervention, the mountain goat population is expected to grow rapidly and expand into habitats important to bighorn sheep. Biologists estimate that suitable habitat within the Teton Range could support roughly 250–400 mountain goats (DeVoe 2015), a number 2.5 to 4 times current population estimates. Given current mountain goat distribution and abundance, and expected population growth, the NPS is also concerned about current and potential increased impacts on other resources (e.g., vegetation and soils) and wilderness character.

Although mountain goats were first seen in the Teton Range nearly four decades ago, it is only recently that a breeding population has been documented. Prompt action is needed to remove or significantly reduce the non-native goats from the park to prevent the rapidly growing and expanding mountain goat population from displacing the small and declining population of native bighorn sheep.

History and Status of Exotic Mountain Goats

As noted above, the current population of mountain goats that resides in the Teton Range is likely derived from individuals that dispersed from a population introduced into the Snake River Range in Idaho more than 45 years ago. Based on consistent observations of adult female mountain goats with young of the year starting in 2008 and a growing number of mountain goat reports since then (Figure 2), it is likely that a breeding population of mountain goats established in the Teton Range in the mid to late 2000s. Mountain goats are adapted to live in steep and rugged mountains year-round and select these areas as their habitat (DeVoe et al. 2015, Lowrey et al. 2017). The species is characterized by long bodies with stocky limbs and specialized hooves that provide the ability to move adeptly in this extreme habitat (Chadwick 1983). Mountain goats are generalist herbivores that consume a wide variety of grass, forb, shrub, moss, and tree species (Chadwick 1983, Houston et al. 1994). Home ranges are typically fixed throughout an adult's life and are larger for females than for males (Chadwick 1983, Festa-Bianchet and Côté 2008).

In 2014, NPS personnel began intensive monitoring of mountain goats to better understand their distribution, movements, and reproduction in the park. Survival of radio-collared mountain goats has been 100%, which is very high for adult ungulates. Although there is currently insufficient data to quantify the population growth rate of the Teton Range mountain goat population, all available information suggests that the population is growing. Approximately 100 mountain goats currently reside in the Teton Range. The apparently high twinning rate suggests that the population is not resource limited (Houston et al. 1994) and will continue to grow. Currently, the majority of mountain goats are found in the central portion of the Teton Range, which is an area of relatively low bighorn sheep occupancy (Figure 2), but they have begun to expand to the north and south. As of winter 2017−18, several mountain goats were observed wintering in the Mt. Hunt/Prospectors area – an important area for wintering bighorn sheep.

As the number of mountain goats in the Teton Range increases, their range will likely expand further into habitat currently occupied by bighorn sheep. Recent research on bighorn sheep and mountain goat habitat use in the GYE indicated high levels of niche and geographic overlap between the two species at the population scale (Lowrey et al. *in review*). A review of 34 bighorn sheep and mountain goat diet studies found evidence for high levels of diet overlap between the two species in both summer and winter (Laundré 1994). However, these findings were primarily obtained from single-species studies rather than comparative studies of both species on shared range. It has been hypothesized that where the distribution of bighorn sheep and mountain goats overlap, the species have narrower niches than where they do not occur together, a result of resource competition (Adams et al. 1982). This hypothesis has some support from the two studies of sympatric bighorn sheep and mountain goat diets that found lower levels of diet overlap than the other studies synthesized by Laundré (1994).

Mountain goats can host a variety of pathogens that can negatively affect bighorn sheep. Given the apparently similar habitat requirements of the two species, transmission of pathogens between species is viewed as a legitimate risk where the two species overlap. Indeed, this was recently documented in Nevada (Wolff et al. 2016). The transmission of bacterial respiratory pathogens from mountain goats to bighorn sheep is of particular concern for the viability of the Teton Range bighorn sheep herd. Respiratory pathogen sampling of mountain goats in the Teton Range has detected bacteria associated with bighorn sheep pneumonia (leukotoxigenic *Bibersteinia trehalosi* and leukotoxigenic *Mannheimia spp.*), in five of 14 animals sampled since 2014. In the absence of other respiratory pathogens, these bacteria are thought to pose only a minor risk to bighorn sheep. However, the likely source population of the goats in the park (Snake River Range population; Figure 2) is known to host several additional respiratory pathogens (*Mycoplasma ovipneumoniae,* and leukotoxigenic *Mannheimia haemolytica;* Lowrey et al. 2018) that collectively pose a high risk of disease to bighorn sheep in the Teton Range. Thus, the lack of detection of these pathogens in the modest sample (n = 14) of Teton Range mountain goats should be interpreted with caution. An effective vaccine against the pneumonia pathogens in bighorn sheep has not been developed. If an effective vaccine existed, delivering it to a sufficient number of the park's bighorn sheep would not be feasible because the animals spend the entire year in remote areas with difficult access.

In northwest Wyoming and adjacent Idaho, mountain goats can be hunted outside of the park in three hunt areas (Figure 3). Wyoming Hunt Area 2 was expanded in 2014 to include the west slope of the Teton Range adjacent to the park. Current Wyoming statute only allows hunters to harvest one mountain goat over their lifetime. Although hunters can harvest a mountain goat on the west side of the Teton Range, due to the accessibility and once-in-a-lifetime restriction, none have been harvested in that portion of the hunt area to date.

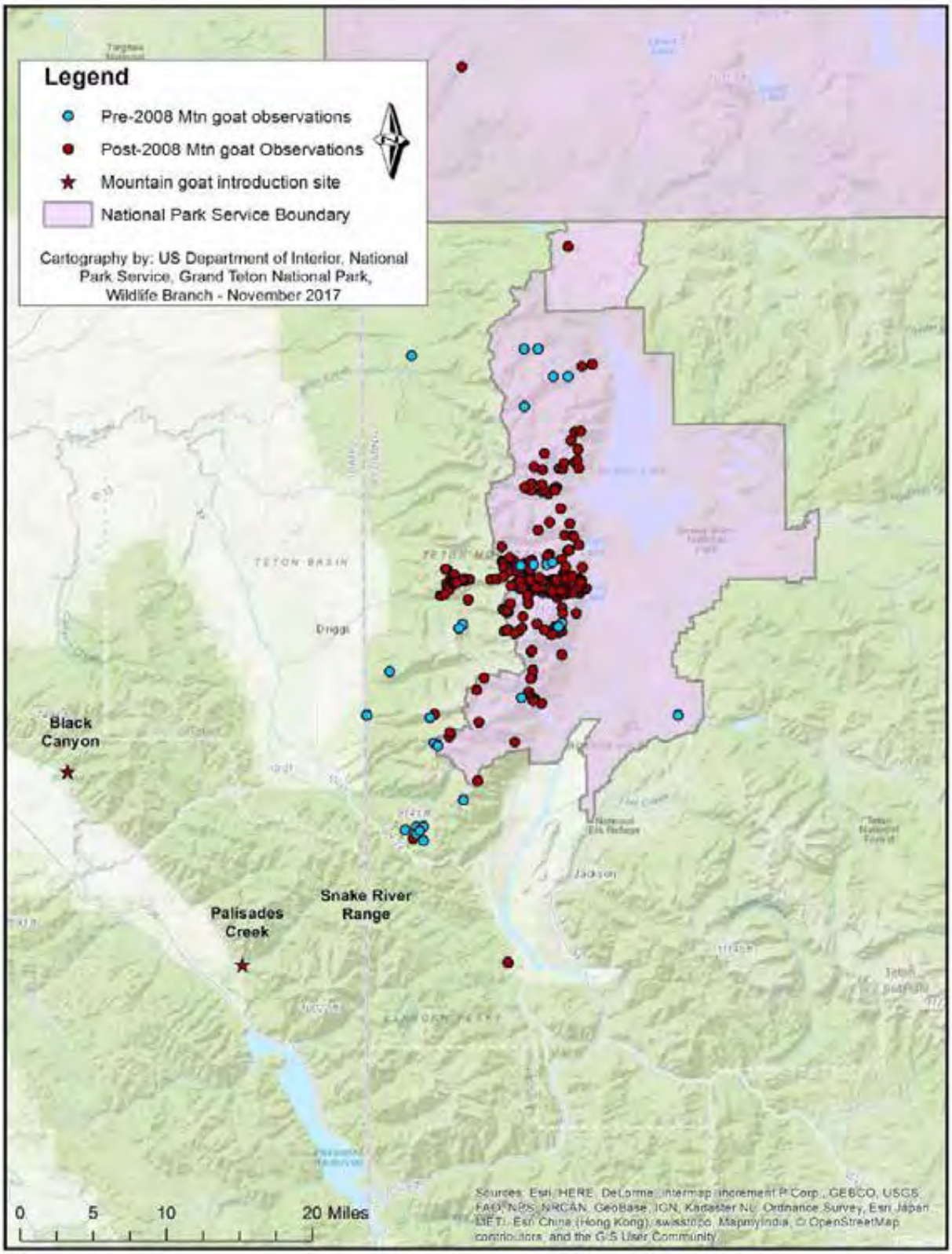

Figure 2. Observations of mountain goats in the Teton Range, 1977−2016.

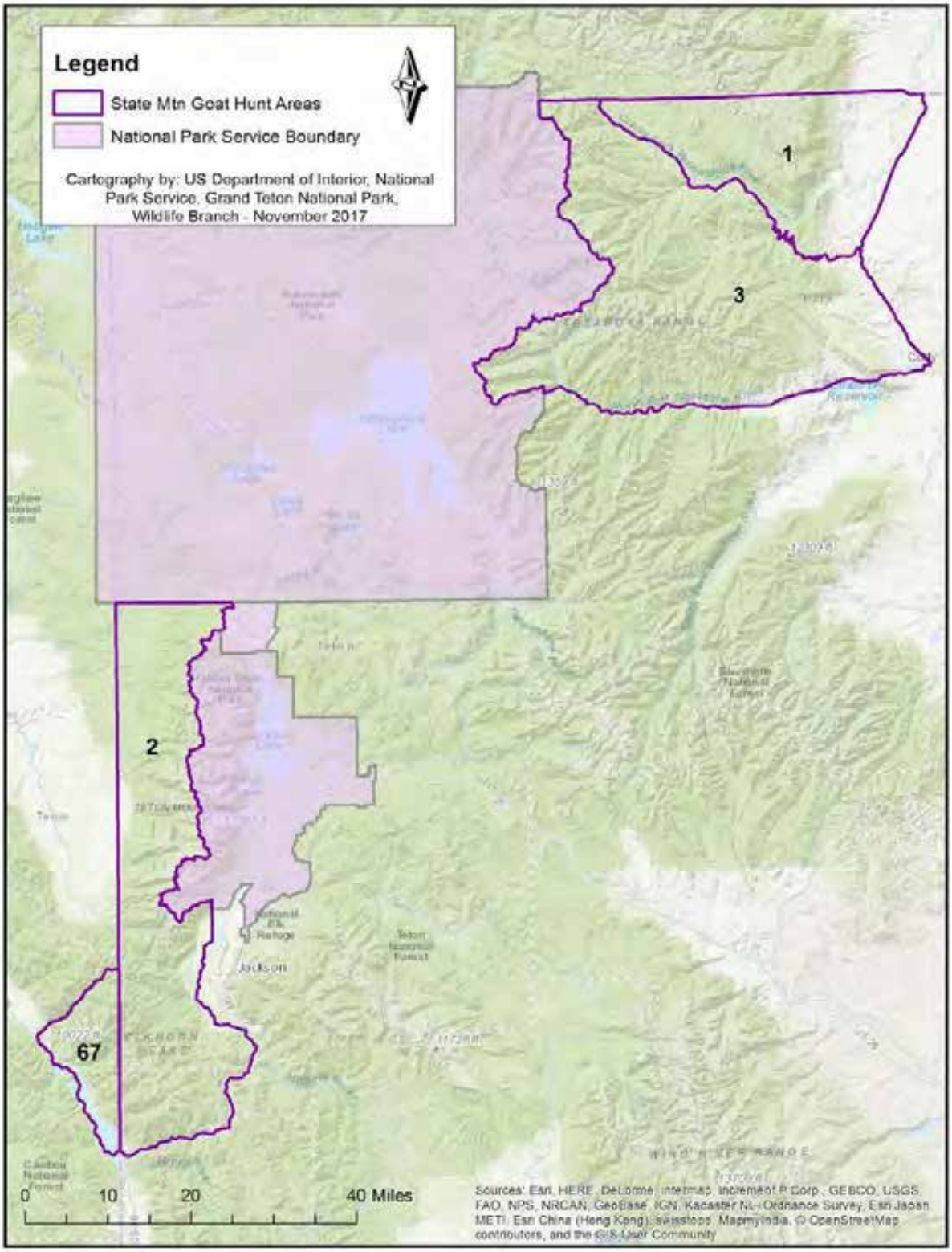

Figure 3. Wyoming and Idaho Mountain Goat Hunt Areas

Issues and Impact Topics Considered

The following topics are carried forward for further analysis in this EA:

- Bighorn Sheep
- Vegetation and Soils
- Whitebark Pine
- Wilderness Character

When determining whether to retain an impact topic for more detailed analysis in this EA, the NPS considered whether or not: the potential environmental impacts to the resource are central to the proposal or of critical importance; a detailed analysis of these impacts is necessary to make a reasoned choice between alternatives; and there could be significant impacts to resources. Because the following impact topics met one or more of these considerations, they were retained for further analysis in this EA.

Issues and Impact Topics Dismissed

Using the same considerations noted previously, the following topics were determined not to warrant more detailed analysis and were dismissed from further analysis in this EA. These topics are not retained for consideration because they are not (1) central to the proposal or of critical importance, (2) necessary to make a reasoned choice between alternatives, (3) a big point of contention among the public or other agencies, or (4) potentially significant impacts associated with the issue. A brief rationale for dismissal is provided for each topic.

Acoustic Environment

Natural soundscapes exist in the absence of human-caused sound. An intact natural soundscape enhances visitor experience and allows for natural functioning of wildlife communication. NPS policies require park managers to protect and restore the natural conditions and soundscapes of parks.

The relative loudness of sounds as perceived by the human ear is expressed using sound levels in units of A-weighted decibels, abbreviated dBA (OSHA 2013). A table of common sound sources and their sound levels is provided below:

Common Sound Sources	Similar Sounds Sources from other NPS Units	Sound Level (dBA)
Train horn at 1 meter	Military jet at 100 meters AGL (Yukon-Charley Rivers National Preserve)	120
Jackhammer at 2 meters	Thunder (Arches National Park)	100
Curbside of busy street	Cruiser motorcycle at 15 meters (Blue Ridge Parkway)	80
Busy restaurant	Conversation at 5 meters (Whitman Mission National Historic Site)	60
Residential area at night	Crickets at 5 meters (Zion National Park)	40
Whispering	Leaves rustling (Canyonlands National Park)	20
Human breathing at 3 meters	Volcano crater (Haleakalā National Park)	10

Table 1. Common sound sources and levels

The following values illustrate some key sound level thresholds and the effects that they have on humans:

- Natural Ambient Sound Level (dBA) – Baseline for current conditions
- Existing Ambient Sound Level (dBA) – Baseline for assessment of impacts
- 52 dBA – Raised voice speech interference at 10 meters (EPA 1974)
- 60 dBA – Normal voice speech interference at 2 meters (EPA 1974)

The use of helicopters, fixed-wing aircraft, and firearms would result in noise that would be temporary and limited in duration but could in turn impact visitors, wildlife, and wilderness character within the park. Potential impacts on the acoustic environment were analyzed using median natural and existing ambient sound levels (26 and 29 dBA, NPS 2010), along with thresholds for disturbance to humans and wildlife from human-caused noise. Between 2007 and 2015, aircraft noise in the summer (July 15−August 15) and winter months (January) were audible a small portion (approximately 6 and 18%, respectively) of the 25-day sampling periods in the northern area of the park (NPS 2015a). The vast majority of aircraft operations that occur within and over the park/parkway originate at the Jackson Hole Airport, and are audible ≤35% of the day. There are also high, transient aircraft flying over the park/parkway daily (audible approximately 7% of a 15-hour day (0700−2200 hours; NPS 2010). Other aircraft operations are not consistently reported to nor tracked by the NPS.

Since helicopter noise impacts (intensity, distance, and duration) are substantially greater than the intensity of noise generated from fixed-winged aircraft overflights, the following acoustic assessment focuses on helicopter sound level intensities. Based on reported data (FAA 1982), the maximum sound level (L_{max}) from a hovering, light helicopter would be approximately 75-78 dBA at a slant distance of 500 feet and 68-71 dBA at 1,000 feet. At a slant distance of 500 feet, up to 18 acres could be impacted with L_{max} at or above 75-78 dBA. At 1,000 feet, up to 72 acres could be impacted with L_{max} or above 68-71 dBA. Helicopter noise would affect the acoustic environment over distances of up to approximately 3.5 miles before maximum sound levels attenuate to existing ambient levels. Helicopter noise would likely not be noticeable to humans and wildlife beyond a distance of 3.5 miles. At 2,000 feet (up to 290 acres), L_{max} could reach or exceed 60 dBA, the threshold for normal voice speech interference, e.g. for hikers. At distances less than 4,000 feet (up to 1,150 acres), L_{max} could reach or exceed 52 dBA, the threshold for interpretive speech interference.

Other sources of noise include gunshots and ground vehicles. Noise from ground vehicles would be restricted to existing roads and not substantially increase noise. The minimum number of gunshots sufficient to remove animals would be limited to the area where a control event is occurring. The majority of gunshots would coincide with the use of helicopters. For a fraction of a second, peak levels from an individual gunshot can reach 140 decibels at very close range. Using impulsive time weighting, gunshot sound pressure levels typically vary from 120-127 dBA at 10m from the muzzle (downrange) and will decay at a minimum rate of 6 dBA per doubling of distance (RCMP 1999). Generally, gunshots would not be heard by most visitors because 1) control events would mostly occur during period of low visitor use (i.e., winter) and 2) visitors would not be allowed into areas where active shooting was occurring. If necessary, sound suppression techniques would be used to reduce gunshot noise.

Aerial mountain goat management operations would take place primarily during the late fall and winter months (mid-December to early March) where ≤1 percent of the total annual backcountry visitation occurs (NPS 2017). In most areas of the park, noise from helicopters would not be audible. For areas near where helicopters are operating, noise would only be audible a fraction of its operation, a period of up to 8 hours per day over a maximum of 35 days (Alternative B) and 50 days (Alternative C) annually. The number of aerial operations would substantially decrease after one to five years as the mountain goat population is reduced. Under typical conditions, sounds of helicopters and gunfire would not be heard ≥3.5 miles away.

To ensure visitor safety, these areas of operation would likely be under temporary closures, thus greatly reducing the likelihood of visitors being affected by intensive short-term aerial flight operations and gunshot noise. To mitigate these affects, park staff would provide advance notifications of scheduled aerial and ground field activities and temporary closures. These notifications would provide an opportunity for visitors to seek alternative arrangements.

Visitors recreating outside of but close to a closure area should be able to verbally communicate to one another, but could hear a distant helicopter, fixed-winged aircraft, and/or gunshot in the distance (see Visitor Use and Experience dismissal). Since few other wildlife species are likely to be present during fall and winter operations, the potential to disturb wildlife at breeding or rearing sites (e.g. dens or nests) or other sensitive habitats would be greatly reduced. Infrequent mountain goat management operations occurring outside of the fall and winter seasons would follow migratory bird and other wildlife protection measures. Therefore, the acoustic environment is dismissed from further analysis. Aircraft operations and gunshot noise impacts on bighorn sheep and wilderness character are discussed in Chapter 3.

Air Quality

The park is designated as a Class I air quality area under the Clean Air Act of 1963 (42 U.S.C. 7401 et seq.) and receives the highest level of protection with only a small amount of additional air pollution allowed. The proposed actions include short-term, periodic use of aircraft and ground vehicles, which would result in temporary increases of vehicle exhaust, emissions, and fugitive dust localized in parts of the general project area. Aircraft and ground vehicles would be intensively used during the first one to five years (as few days as necessary during up to three 14-day periods/year), and then only occasionally (once per year, with the possibility of a small number of additional flights to continue to remove mountain goats into the future). Ground vehicles would be used to transport staff to trailheads and/or frontcountry staging/helispot areas, and may be used under one proposed alternative to move some mountain goats out of the park after being carried by helicopter out of the backcountry. The slight temporary increases in exhaust, emissions, and dust would not affect air quality in the long term or the park's Class I air quality designation.

Archeological Resources

The park is known to contain a variety of archeological resources. To protect these resources, all of the action alternatives would avoid known archeological sites. Appropriate steps, such as halting work, employing archeological monitors, and notifying the park's Cultural Resources Branch staff immediately upon discovery, would be taken to protect any archeological resources that are inadvertently discovered during activities related to implementation. Helicopter landings in the backcountry, if needed, would occur on top of existing snow pack, which would avoid disturbing archaeological resources through downdraft and low frequency vibration absorption within the snow layer. Any helicopter landings in areas without proper snowpack may require archeological monitors to be present. All backcountry landing site coordinates would be reported to the park's Cultural Resource Branch for record keeping purposes. Staging areas/helispots in the frontcountry are located in previously disturbed areas.

Environmental Justice

Executive Order 12898, *General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. Given the analysis in this EA, it was determined that none of the alternatives would have disproportionate health or environmental effects on minorities or low-income populations or

communities, as defined in Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses (EPA 1998).

Ethnographic Resources

NPS Director's Order 28: *Cultural Resource Management* defines ethnographic resources as "any site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it." Any known sacred sites, as defined in Department of the Interior Environmental Compliance Memorandum 97-2, would be avoided (DOI 1997).

It is known that American Indian people utilized the area over thousands of years for hunting and gathering subsistence and occupation. The park holds many resources important to these tribes including minerals, wildlife, plants, and water. These resources do not always have a defined boundary and may occur in and adjacent to the project area.

Twenty-four tribes traditionally, and currently, value Jackson Hole for hunting, gathering, ceremonial, and other practices (see Chapter 4: Consultation and Coordination for a list of traditionally associated tribes and consultation information). During the planning process for this EA, the park contacted these tribes and consulted with them about potential concerns associated with ethnographic resources. They did not have any particular concerns with removing exotic mountain goats from the park or with the management activities needed to remove these animals. If tribes subsequently identify the presence of ethnographic resources, appropriate mitigation measures would be undertaken in consultation with the tribes. Any known sacred sites would be avoided during management activities. The locations of ethnographic sites would not be made public. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered, provisions outlined in the Native American Graves Protection and Repatriation Act of 1990 (25 USCUSC 3001) will be followed.

Federally Listed Wildlife Species

Four federally listed or proposed wildlife species and one critical habitat occur or have potential to occur within the project area (Table 2). The yellow-billed cuckoo, western glacier stonefly, and designated critical habitat for Canada lynx would not be impacted as a result of implementing any of the alternatives. Yellow-billed cuckoos are migratory and generally are only present in northwest Wyoming during the summer months. They nest in low elevation riparian woodland forests which do not occur in the action area. The glacier stonefly occurs in several melt water streams within the action area. However, during the winter (when most activities would take place) these locations are covered in snow and would not be impacted. Monitoring or other activities that take place in the summer are not expected to occur near sites where glacier stoneflies reside. Although a small amount of designated critical habitat for lynx occurs within the action area, no activities that would change the amount or condition of lynx habitat are proposed.

Table 2. Endangered, threatened, and proposed wildlife species of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway, 2018.

Common Name (Scientific Name)	Status
Canada lynx *(Lynx canadensis)*	Threatened
Canada lynx critical habitat	Designated
Grizzly bear (*Ursus arctos*)	Threatened
North American wolverine (*Gulo gulo*)	Proposed Threatened
Yellow-billed cuckoo (*Coccyzus americanus*)	Threatened
Western glacier stonefly (*Zapada glacier*)	Proposed Threatened

Two species, Canada lynx and wolverine, could be present within or near the proposed project area during the late fall and winter months (mid-December – early March) when intensive activities may take place. Grizzly bears could also be present and active in the project area in spring, summer, and fall. Although some grizzly bears may also be present in the project area in winter, they are typically inactive for about 5 months while in winter dens. A detailed Biological Assessment (BA) of Canada lynx, grizzly bears, and wolverine will be completed and submitted to USFWS prior to determining the selected action. The BA will contain more detailed information on potential impacts to these species and a final impact determination for each. In brief, monitoring and management activities proposed under the alternatives are not expected to have lasting or substantial effects on Canada lynx, grizzly bears, or wolverine, and some beneficial effects would occur.

Lynx are strongly tied to subalpine forests with abundant snowshoe hare, whereas mountain goats are generally associated with non-forested alpine or subalpine habitats near steep terrain. In addition, lynx are typically active at dawn and dusk, when monitoring and management activities would not occur. Given these differences in habitat preferences and use, the likelihood of temporal and spatial overlap between lynx and mountain goats is low; therefore, impacts on lynx are not anticipated. This in combination with a lack of recent confirmed lynx observations in the park and the surrounding area, despite intensive surveys, indicates lynx may currently be absent from the project area and therefore are unlikely to be impacted. Notwithstanding, aircraft could overfly habitat suitable for lynx, thus possibly disturbing any individuals or prey species that are present. Any disturbance is likely to be limited to the time the aircraft is passing overhead (<10 minutes), which could cause individual lynx or prey species to change their behavior or seek cover if the aircraft is perceived as a threat. It is likely that individuals will resume their prior or undisturbed behavior (if it was altered) once the aircraft is no longer in the vicinity.

All of GRTE, including the Teton Range, is considered occupied grizzly bear habitat, although most reported activity in the Teton Range occurs north of Moran Canyon. Suitable denning habitat for grizzly bears occurs throughout the Tetons (Podruzny et al. 2002). Overlap between high quality mountain goat habitat and grizzly bear denning habitat is limited, but these habitats are adjacent to each other in some locations. Grizzly bears are considered opportunistic omnivores whose diet varies widely and is influenced by annual and seasonal variation in available foods. The highest quality food available to grizzly bears in the GYE includes army cutworm moths, whitebark pine nuts, ungulates, and cutthroat trout. Under all alternatives (but more so under B and C), mountain goat carcasses would occur on the landscape and represent a potential food source and attractant to grizzly bears. However, because grizzly bears hibernate for 4-6 months each year and are likely to be in their dens when management activities occur, the risk of conflicts due to the presence of carcasses on the landscape can be adequately managed. The potential also exists to disturb grizzly bears either in or outside of their dens during flight operations. Denning grizzly bears appear to be most sensitive to disturbance early in the denning season (Linnell et al. 2000). In the GYE, 90% of female and male grizzly bears were denned by the fourth week of November and the second week of December, respectively (Haroldson et al. 2002). Given the proposed timing of intensive aircraft based management activities (when most bears have been denned for several weeks to a month), disturbance to grizzly bears is expected to be minimal. In addition, conservation measures to limit highly disturbing activities near known, occupied dens would further reduce the potential for impacts. Similarly, management actions that would result in mountain goat carcasses on the landscape would occur while bears are denned and there would be several month when bears are inactive for carcasses to be consumed by other scavengers or predators. However, carcasses could become buried in snow and become available again in the spring once bears emerge. NPS personnel would monitor the status of carcasses and either remove those in potential conflict areas or implement an area closure until the carcass if fully consumed or decomposed and no longer is an attractant.

As a species tied to high elevation remote areas, wolverine may occupy the same areas as mountain goats. Monitoring and management flight operations in areas where wolverine are present could cause

disturbance. In areas where project-related activities are relatively high and continuous over the course of several days, wolverine may alter their normal behaviors (e.g., feeding, traveling, etc.) or be displaced from those habitats. However, such disturbance would be temporary (i.e., limited to the time aircraft and associated human activities are occurring – several minutes to several hours) and wolverines would be expected to return to these areas once those activities have ended. Wolverine may be especially sensitive to disturbance during the denning period in later winter, consequently conservation measures would be implemented to prevent activities near den sites that could result in females relocating their litters or abandoning dens due to project-related disturbances. In addition, the expected timing of intense aircraft-based activities (mid-December–early March) would not overlap with the majority of the denning period. All alternatives could have beneficial impacts on wolverines due to the presence of carcasses (from a pneumonia die-off, should one occur, or from lethal removal actions) to feed on in the project area. These benefits would be short-term and limited to the time that carcasses are available on the landscape (1−2 weeks or longer if cached).

With conservation measures in place, disturbance under the alternatives could temporarily affect individuals, but would not negatively impact the grizzly bear, wolverine, or lynx populations as a whole.

Historic Structures and Cultural Landscapes

The park currently contain 732 resources that are listed, or eligible for listing, in the National Register of Historic Places. Individual resources may be historic sites, buildings, structures, or objects. These resources are found in 44 locations, where there may be one or multiple resources with the same context and historical significance in what is commonly called a historic district. Some of these historic districts, such as Colter Bay Village, Kimmel Cabins/Lupine Meadows, and Snake River Land Company Office and Residence, are located near the frontcountry staging areas/helispots that would be used for processing captured mountain goats, and for transferring mountain goats to recipients for translocation via live removal from the park. In backcountry areas, there are six historic patrol cabins (Cascade Canyon, Death Canyon, Granite Canyon, Leigh Lake, Lower Berry Creek Patrol Cabins, and White Grass Ranger Station) and the Valley Trail System, which includes the Teton Crest Trail, and nearly all the trails accessing the canyons of the Teton Range. Moose-Wilson Road is located at the base of the Teton Range west of the Snake River and south of Moose. The majority of this road is closed in winter as the road section from Granite Canyon Trailhead to Death Canyon Trailhead is gated, closed to motor vehicles, and unplowed. Other historic properties occur near the foothills of the Teton Range, including the White Grass Dude Ranch, which is operated by the Western Center for Historic Preservation during the summer months.

Field activities associated with management of mountain goats would not change the character or use of any cultural resources within or adjacent to the project area. Vehicular use of historic roadways and parking areas, and ground crews on hiking trails are activities commensurate with the intended and designed purpose of these structures. The footprint of helicopter landing zones (including disturbance from downdraft and low frequency vibration) and ground crew activity would occur outside of developed areas and not within close proximity to historic buildings and would thus avoid disturbing historic structures.

According to the NPS Director's Order-28: *Cultural Resource Management Guideline*, a cultural landscape is a reflection of human adaptation and use of natural resources, and is often expressed in the way the land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. Although noise from helicopters, and gunshots would occur during monitoring and management operations, the sounds would be distant and audible for a period of up to 8 hours per day over a maximum of 35 days (Alternative B) and 50 days (Alternative C) annually. The number of aerial operations would substantially decrease after one to five years as the mountain goat

population is reduced. No impacts to historic structures would occur, and no permanent or long-term impacts to cultural landscapes would occur.

Indian Trust Resources

The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. The park's lands and resources related to this project are not held in trust by the Secretary of the Interior for the benefit of Native Americans.

State Listed Species of Greatest Conservation Need

The State of Wyoming has identified five Species of Greatest Conservation Need (SGCN) with a native species status of 1 or 2 (highest need for conservation) that may be present within the proposed project area including: Common loon (*Gavia immer*), trumpeter swan (*Cygnus buccinator*), Canada lynx (*Lynx canadensis*), American pika (*Ochotona princeps*), and western toad (*Anaxyrus boreas*). The Canada lynx is also a federally listed species and is addressed in the Federally Listed Wildlife Species section above. The loon, trumpeter swan, and western toad are dismissed from further analysis as the project area is outside the elevational range of these species or the species is not expected to occur during the season of impact.

American pikas are small mammals that reside in the alpine zone of the Teton Range where mountain goats also occur. During the snow-free months, pikas actively forage in meadows adjacent to talus slopes. Although they do not hibernate and are active in the winter, they remain in their dens that are covered by snow. Consequently, pika would not be disturbed by actions proposed during the winter months. During the snow-free months, pika may occur near camera monitoring sites or at other locations where mountain goat management activities occur. Recent research (Stafl and O'Connor 2015) suggests that pikas respond to hiker disturbance by exhibiting anti-predator behaviors (e.g., alert response and reduced foraging time). Although individuals near trails showed tolerance for human activity, they still exhibited an anti-predator response. This study also found that temperature was the most important predictor of pika foraging behavior. In the summer, pika are highly sensitive to temperatures >25°C (77°F) and may restrict their activities to the cooler talus environment and limit their foraging activities. Any negative disturbance effects from deploying and checking cameras for monitoring purposes or from management actions in habitats also used by pikas may be minimized by the timing of those activities. Camera deployments and checks frequently occur around midday as these are typically day trips. Consequently, disturbance to pikas may be reduced if they are already restricting their foraging activities due to higher temperatures. However, activities occurring during cooler periods when pika may be active, could temporarily disturb individual pikas for the time those activities occur (~15 minutes to 1 hour), but they are not anticipated to affect the population as a whole. Summer activities, including those related to monitoring and mountain goat management, are expected to be intermittent and of short duration (i.e., few minutes to a few hours).

Visitor and Employee Health and Safety

The potential for impacts to the health and safety of the public and park employees during proposed management actions (e.g., helicopter use and landings in mountainous terrain, and firearms use to lethally remove mountain goats) would be mitigated through strict adherence to established NPS safety protocols. Temporary area closures would occur to ensure that visitors would not risk injury by inadvertently walking into areas where planned management actions are occurring. In addition, if individual mountain goats behave aggressively toward humans, the context of the encounter would be analyzed immediately, and the animal promptly and humanely dispatched, if appropriate.

Visitor Use and Experience

The wilderness and backcountry areas of the Teton Range where mountain goats are present offer a wide range of visitor uses and experiences throughout the year. Visitor activities that frequently occur during the summer and spring/fall shoulder seasons include day hiking, backpacking, mountain climbing, and backcountry camping. Popular activities during the winter and spring months include backcountry skiing and snowshoeing. Throughout the year, visitors enjoy the park's spectacular scenery and diverse native wildlife.

Primary access points into the wilderness and backcountry areas of the park's Teton Range are the Death Canyon, Taggart Lake, Lupine Meadows, Jenny Lake, and String Lake trailheads. Based on counter data obtained at these trailheads, about 281,000 recreational visits occurred in the park's Teton Range in 2016 (Newton 2017a).

Backcountry camping is a popular recreational activity, especially in the high elevation canyons and lakes of the Teton Range. In 2016, there was a total of 36,206 backcountry user nights (NPS 2017). This number represents all backcountry areas in the park, including areas within the Teton Range where the majority of backcountry camping occurs.

Guided climbing in the Teton Range comprises the vast majority of guided visitation in the Grand Teton wilderness. Guided climbing in the Teton Range occurs as day trips, overnight trips, and climbing schools. In 2016, 6,644 visitors participated in guided climbs in the Teton Range. The most popular peaks that are ascended in the Teton Range are Grand Teton, Middle Teton, Disappointment Peak, and Storm Point. The most popular month for climbing the peaks in the Teton Range is August (Newton 2017b). Other guided activities include backcountry skiing where a total of 1,093 visitors were guided during the winter of 2016-2017 (Canetta, 2017).

Fixed-winged and helicopter operations would temporarily affect visitors due to the visual presence and acoustic intensity of aircraft operating in the Teton Range where mountain goats are present (see Acoustic Environment dismissal above). Under all alternatives there would likely be temporary area closures during management activities. The total number of closures would vary annually and by alternative and largely depend on environmental conditions that affect duration of the operations, level of visitor use, and locations of mountain goats.

The majority of aircraft operations and temporary closures would occur in the fall and winter months (October through April) when backcountry visitation is ≤1 percent of total annual backcountry visitation (NPS 2017).The temporary effects of aircraft operations and temporary closures would likely diminish individual visitor use and experience within the backcountry and wilderness areas of the Teton Range. These effects are anticipated to lessen as mountain goats are removed from the park over the first one to five years. To mitigate these affects, park staff would provide advance notifications of scheduled aerial and ground field activities and temporary closures. These notifications would provide an opportunity for visitors to seek alternative arrangements. Therefore, visitor use and experience is dismissed from further analysis. Visitor experience as it specifically relates to wilderness solitude or primitive and unconfined recreation is retained as an impact topic under wilderness character (see chapter 3).

Wildlife including Migratory Birds (Excluding Bighorn Sheep)

There are 60 species of mammals, over 300 species of birds, and several species of reptiles, amphibians, and other vertebrates that reside within the park, some of which may occur in the action area (in the alpine

and subalpine environments where mountain goats live as well as near frontcountry staging areas). Those that could potentially occur in the project area during the winter months when intensive monitoring or removal actions would occur include several species that may scavenge on mountain goat carcasses including mountain lion (*Puma concolor*), coyote (*Canis latrans*), red fox (*Vuples vulpes*), Pacific marten (*Martes caurina*), gray wolf (*Canis lupus*), and common raven (*Corvus corax*). Given that mountain goats occur at high elevation where snow is deep, conditions are harsh, and food resources are limited during the winter, it is likely that if any of these species are present, they would occur at very low density. Grizzly and black bears typical hibernate from late fall through early spring and are unlikely to occur in habitats used by mountain goats in mid-winter. Similarly, most bird species, including those sensitive to disturbance such as golden (*Aquila chrysaetos*) and bald eagles (*Haliaeetus leucocephalus*) and peregrine falcons (*Falco peregrinus*) migrate out of northwest Wyoming or to lower elevations and are unlikely to be present at higher elevation in mid-winter. Amphibians and reptiles are also typically inactive during the winter months at high elevation.

Helicopter activities may cause short-term disturbances (for the time the helicopter is in the vicinity – generally several minutes to an hour) to any wildlife present. Because few species are likely to be present during winter operations and given implementation of conservation measures, the potential to disturb wildlife at breeding or rearing sites (e.g. dens or nests) or other sensitive habitats would be reduced significantly. No substantial impacts to wildlife, including migratory birds or their behavior is anticipated. Any disturbance impacts are likely to be temporary and short-term (described above) and are not expected to affect these species at the population level. Potential impacts are not expected to measurably increase impacts to migratory birds or other wildlife, consequently this topic is dismissed from detailed analysis.

CHAPTER 2: Alternatives

Alternative A – No Action

Under the no-action alternative, current actions to manage nuisance mountain goats and monitor the population would continue, but no active population management of exotic mountain goats would occur within the park, except if needed to address a human safety concern. Such management of nuisance mountain goats would include hazing or removal of individual goats, public education, and/or area closures. Ongoing monitoring efforts to document the distribution and abundance of mountain goats would continue, as funding allows. Aircraft based operations would occur ≤20 days; including ≤12 days of fixed-wing monitoring (approx. 1 flight/month), ≤3 helicopter survey days, and ≤5 helicopter-based capture days (Table 2).

Refer to Elements Common to All Alternatives and Table 2 for additional information on humane management actions, helicopter/firearms use requirements, monitoring, live capture, lethal removal of nuisance animals, and other actions.

Alternative B – Lethal Removal Only

Alternative B would manage exotic mountain goats using lethal actions to remove goats from the park. The alternative would also include the range of actions common to all alternatives and common to the action alternatives. It is likely that few mountain goats would be captured, sampled, and radio-collared for monitoring purposes since emphasis would be on population reduction. However, there still may be a need to capture, collar, and release a limited number of animals to facilitate monitoring and aid in finding goats for management activities.

Aerial-based lethal removal would be performed by federal personnel or contractors with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Mountain goats would be killed using firearms with non-lead ammunition from fixed-wing aircraft, helicopter, or the ground. If direct removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats would be captured and euthanized. Aerial capture techniques would include darting or net-gunning from a helicopter. Ground capture techniques would include ground darting or baiting goats to a drop net, clover trap, or snare. Aerially-captured mountain goats would be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they would be humanely dispatched. Those captured using ground techniques would be dispatched on site. Animals would be dispatched (i.e., using euthanasia drugs or by gunshot) by trained personnel following established and approved guidelines from the American Veterinary Medical Association (AVMA 2013). The actions described above would take place in the Teton Range backcountry, most of which is recommended wilderness.

Mountain goat carcasses would generally be left on the landscape for the benefit and use of scavengers and/or to decompose naturally. When possible, carcasses would be kept away from popular visitor-use areas such as trails and campsites. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears. Assuming that 90% of the estimated 2018 population of 100 mountain goats could be removed over the course of the population reduction, approximately 90 mountain goat carcasses could be left on the landscape.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities would occur in ≤3 removal periods/year between mid-December and early March. If late fall/winter missions are unsuccessful, removals could occur at any time of year. Each management period would last ≤2 weeks. Aircraft-based operations would occur ≤25 days, which would include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period (Table 2). If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals would take place where mountain goats occur within the park, but would generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population or 10−12 goats would likely remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters would also be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year would occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

It took roughly 40 years from their introduction in Idaho for mountain goats to establish a breeding population in the park. If lethal management is effective, it could be 5−30 years before goats disperse to the Teton Range again. The actual time frame would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

Refer to Elements Common to All Alternatives, Elements Common to the Action Alternatives (B and C), and Table 2 for additional information on humane management actions, helicopter/firearms use requirements, monitoring, live capture, lethal removal, management framework, and other actions.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Under Alternative C, mountain goats could be captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS would work closely with appropriate state wildlife and federal land management agencies or other approved recipients (including zoo personnel) to plan and execute the translocations. Recipients would generally be responsible for transport and associated costs to move mountain goats from frontcountry staging areas within the Grand Teton to release sites outside of the park. Mountain goats could be captured over the course of up to 3 to 5 years, with most activity in years 1 and 2. Capture operations would occur between December and March. Captured mountain goats would be transported by helicopter to frontcountry staging areas, where they would be transferred to approved recipients. Capture and translocation under Alternative C is projected to involve approximately 25% of the 100 mountain goats. However, the number of mountain goats captured and translocated could be more or less, depending on capture success and the interest from outside entities to receive mountain goats and their ability to cover transport, disease testing, and associated expenses.

When translocation and lethal removal activities occur in the same management period, live capture and translocation activities would generally occur prior to lethal removal. This order of actions is desirable because capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and a significant portion of the population is in terrain where capture can be achieved safely. As the removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. Once capture efficiency and opportunities for safe capture decline, the operation would transition to lethal removal techniques. However, if/when appropriate the park may conduct lethal removal actions before translocations as dictated by conditions.

Mountain goats would be captured and then transferred to the interested recipient. Capture operations would occur wherever goats are located within the park, but would likely take place between Cascade and Snowshoe canyons (Fig. 1), which are within recommended wilderness. Goats would be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats would be ferried beneath the helicopter in a transport bag to a staging area. NPS personnel would coordinate with WGFD personnel and others to facilitate the transfer of mountain goats to recipients. Recipients would be responsible for acquiring transport or other permits as necessary. No more than four goats would be transported via helicopter during a single trip. The maximum ferry time would be approximately 45 minutes. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it would be dispatched as quickly as possible using approved techniques (AVMA 2013). Translocation activities would initially require ≤10 helicopter flight operation days annually to transport goats to frontcountry staging areas (Table 2). The number of flights would decrease as the mountain goat population is reduced. After reaching the staging areas, mountain goats would be transported by recipients using road-based vehicles to translocation sites outside of the park. Ground transport would likely take ≤2 days to reach the translocation sites. Translocations would occur primarily from mid-Decmber through early March, but could occur at other times of the year as necessary. The number of park staff and other individuals taking part in translocation activities would vary between approximately 5−10 people.

Helicopter capture efficiency would be greatest at the start of live capture operations, when mountain goats are naïve and occur in areas with safe access. As capture operations progress, the goats are likely to shift their distribution to areas of rougher terrain where safe capture is difficult. If capture efficiency exceeds typical effort for capturing goats (2014−2016 = 2.5 hours/goat), helicopter-supported translocation operations would cease, and shift to lethal removal techniques as described under Alternative B (Table 2).

Refer to Elements Common to All Alternatives, Elements Common to the Action Alternatives (B and C), and Table 2 for additional information on humane management actions, helicopter/firearms use requirements, monitoring, live capture, lethal removal, management framework, and other actions.

Elements Common to All Alternatives

1. **Humane Management Actions**: In accordance with standard operating procedures, NPS *Management Policies 2006* (4.2.3; NPS 2006), the Animal Welfare Act, and guidance from the American Society of Mammologists (Sikes and Gannon 2016), all actions involving direct handling or management of goats would be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained.

2. **Designated Frontcountry Helispots and Staging areas:** Frontcountry helispots and staging areas would be required for mobilization of staff and equipment during management activities. When accessible, helicopter landing and/or refueling sites would be used (Figure 1). All helispots and staging areas are located within frontcountry developed areas and are intermittently used for search and rescue and other park administrative aerial- and ground-based operations.

3. **Helicopter/Firearms Use Requirements:** Helicopter and firearms use would comply with the NPS firearms use policies, Interagency Helicopter Operations Guide (IAMC 2006), and the NPS Aerial Capture Eradication and Tagging of Animals (ACETA) Operations Plan (2017). Per NPS aviation policy, only qualified government or contract personnel would participate in aerially-based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations would be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations would base out of the Jackson Hole Airport. Firearms would be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and, under the action alternatives, to lethally remove mountain goats in the park.

4. **Monitoring**: Monitoring activities would include temporary capture (helicopter based), radio-collaring and/or marking with paint of mountain goats; collecting samples for disease and genetic testing; fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. Collaring mountain goats would provide a more complete assessment of mountain goat survival, productivity, distribution, as well as possible competitive interactions with, and influences on, bighorn sheep.

   Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys would occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards the natural or artificial mineral lick. Remote cameras would be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys would be completed over 1−3 days per year, with 6−8 hours of flight time each day (Table 2). During the aerial survey, a low-level helicopter would systematically search all mountain goat habitat in the park.

   For monitoring purposes mountain goats would be captured via net gunning or remote drug delivery (i.e., darting) from a helicopter following established and approved capture and handling protocols. Upon capture, the helicopter would land close by and the mountain goat(s) would be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing mountain goats would be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam would be conducted to check for signs of respiratory distress or capture-related injuries and baseline heart rate, respiratory rate, and rectal temperature would be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites would be radio-collared and released on site. Blood and fecal samples, and nasal and tonsil swabs would be collected from goats transported to frontcountry sites to assess disease, micronutrient, or genetic status. These goats would then be radio-collared and returned to the capture location for release.

   The number of days needed for captures would depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured, but weather delays could extend that

timeframe. Given favorable weather conditions, approximately 10 goats could be captured in a five-day period flying approximately 5 hours/day. Based on these time estimates, it is anticipated that helicopter-supported capture of mountain goats for monitoring purposes would likely take place in a 5−7 day window during the late fall and winter months (mid-December – early March) when needed and as funding allows. However, if necessary, captures for monitoring purposes could occur outside this window. The NPS would continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) would occur at established frontcountry staging/refueling sites. No vegetation clearing is proposed at landing sites. A contract helicopter would base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations would base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park (BTNF and GRTE 2017; Figure 1) and could be used for processing/sampling captured mountain goats and refueling the helicopter. Capture with transport would involve two backcountry landings per animal–one to pick the animal up and one to return it to its capture location.

5. **Carcass disposal:** Carcasses resulting from aerial- and ground-based removal activities would generally be left in place to provide biological and ecological benefits. They would be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses would be moved by ground personnel, who would drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses would be relocated or removed by the eradication crew using a helicopter. Transportation of carcasses would be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcasses cannot be moved, but may pose a risk to park visitors, temporary area closures would be implemented (see Temporary Closures below).

6. **Temporary Closures:** It is possible that specific areas of the park would need to be temporarily closed during mountain goat management activities if park staff would determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures would occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved, but may pose a risk to park visitors, temporary area closures would be implemented. These closures (≤ 5 acres) would remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public would be appropriately notified in advance of these temporary closures.

7. **Artificial Baits**: Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal. Locations would be chosen to minimize effects to the environment.

8. **Education/Interpretation**: The NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources. The NPS would continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

9. **Work Cooperatively with Non-NPS Land and Wildlife Managers**: The NPS would work cooperatively with WGFD, Idaho Department of Fish and Game (IDFG), the United States Forest

Service (USFS) (Bridger–Teton and Caribou–Targhee national forests, BTNF and CTNF respectively) and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

10. **Wilderness Character Monitoring:** NPS wildlife biologists would report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the *Grand Teton Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship* (NPS 2015a). Measures reported would include authorized actions that manipulate wildlife, status of nonnative animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

Elements Common to the Action Alternatives (B and C)

1. Management of mountain goats would be guided by the following framework:

   Population Reduction (Years 1-5). The goal would be to reduce the number of mountain goats in the population as quickly as possible. Repeated systematic surveys may be used to determine population trajectory and the rate of removal necessary for further population reduction. Systematic surveys may become less effective as abundance decreases. The timing and duration of population reduction efforts would ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction efforts via helicopter-based efforts would generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

   Post-reduction (Years 6-7). This would occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts would transition from intensive to tactical monitoring and removal. Tactical monitoring and removal efforts would occur year round.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal would be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring would continue and it may be necessary to employ several monitoring methods simultaneously in combination. Removal efforts would likely be ground-based and tactical.

2. **Education/Interpretation:** In addition to the educational and interpretive information provided to the public under all alternatives the NPS would provide additional information on the progress towards achieving the desired conditions. The NPS would also continue to request visitors to report observations of mountain goats and bighorn sheep.

3. **Lethal Removal:** Both alternatives would involve the use of firearms to lethally remove mountain goats from the park. The type of firearms used would typically be shotguns for helicopter-based removals and rifles for ground-based actions.

Given the steep, inaccessible terrain where mountain goats reside it is likely that a significant portion of the removal work would involve aviation operations, although some work may occur from the ground. Ground-based removals may be necessary to complete removal of mountain goats, and these efforts could include federal staff (i.e., NPS staff, Wildlife Services staff, or other approved and qualified government employees).

Conservation Measures to Reduce or Avoid Potential Impacts

The following conservation measures are applicable to all alternatives:

Acoustic Environment

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g. propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

Cultural Resources

All staff and other persons involved in mountain goat management would be informed of the procedures to follow in the event of archaeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.

If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (≤600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park archaeologist (307-739-3671) will be contact for any questions or discoveries. The same measures would be followed for paleontological (fossils) and other non-cultural related resources.

In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archaeologists would be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.

Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the Cultural Resources Program Manager (307-739-3671) for record keeping purposes and to pursue archaeological surveys of the areas, as warranted, post-project.

- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
  Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.

Soils

- Field activities would minimize disturbances on steep slopes and bare mineral soil.

Vegetation

- Location information on backcountry work areas (e.g. bait and capture sites) would be recorded and maintained as part of the record of actions taken; this would ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas would be minimal in size and short-term in nature to reduce vegetation impacts of staging.
- Equipment and boots would be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of nonnative species.

Visitor Use and Experience

- As much as possible, field activities in backcountry and wilderness areas would occur during periods of minimal visitation, and would avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications would be issued to inform visitors of temporary area closures and other management activities.

Wilderness Character

- **Undeveloped:** Bait lures, traps, cameras and other installations would be removed at the end of each field season. Located animal collars that no longer serve as tracking devices would be retrieved when practicable.
- **Solitude or primitive and unconfined recreation:** Aerial and ground-based field activities in wilderness areas would occur during periods of minimal visitation and would avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff would examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors (see Visitor Use and Experience above).
- **Other features of value:** Field activities would avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources. If previously unknown archeological and/or paleontological resources and/or human remains are discovered during field activities, all work in the immediate vicinity of the discovery shall be halted until the resources are identified and documented, and an appropriate mitigation strategy is developed by park cultural resources staff (see Cultural Resources above).

Wildlife

- To prevent environmental contamination, only lead-free ammunition would be used.
- Helicopter pursuits for the purpose of live capture would occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses would be recorded and passed on to park staff at the end of each day. Based on this information, appropriate trail or area closures would be identified and implemented, as necessary, or carcasses would be moved/removed to minimize the potential for conflicts.

- The decomposition status of mountain goat carcasses would be monitored throughout the season and appropriate measures (e.g. removal, demolition, area closure, etc.) would be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Helicopter based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter based removal of mountain goats would be permitted within important bighorn sheep winter habitat only under the following conditions:
  - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
  - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
  - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer would be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer would be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities would be briefed on identification of wolverines, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine is observed, pilots would be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine denning habitat during the sensitive denning period (after mid-February), a denning survey would be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer would be established around the den.
- A disturbance free buffer of 1 km around known, occupied grizzly bear dens would be implemented to minimize disturbance to denning grizzly bears.
- All activities would comply with the parks' Superintendent's Compendium (2018 and as updated) regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
  - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) would ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
  - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office (307-739-3673) will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.

- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately (307-739-3301). All bear sightings must be reported to the park's Bear Management Office (307-739-3673) in ≤24 hours.

Table 3. Summary of Actions in the Alternatives

Action	Element	Purpose	Operational Window	Target[1]	Duration (days)	Frequency	Alt. A	Alt. B	Alt. C
Monitoring	Telemetry/observation fixed-wing flights	Monitor distribution, movement, demographics, and abundance, and support live-capture operations	Year-round	None	Monitoring/capture support: ≤12 flight days total; support for translocations (Alt C only): ≤5	As needed to support capture or monitoring efforts	X	X	X
	Camera traps	Population estimate	Year-round	None	Year-round in some locations; May−Oct. in others	Annually	X	X	X
	Helicopter survey	Population estimate	Dec−Mar	None	1−3 flight days	Annually with bighorn sheep survey	X	X	X
	Ground surveys	Population estimate	May−Oct	None	≤2 weeks	Annually	X	X	X
Live capture	Capture, radio collar, and release	Aid monitoring/disease testing	Dec−Mar	5−10 goats	2−5 days	As needed to facilitate management and monitoring and as funding allows	X	X	X
	Translocation	Population reduction	Dec−Mar or at other times of year as necessary	≤25% of existing population (≤25 goats)	5−10 days	Consider annually during population reduction when interest warrants and funding allows			X
Lethal Removal	Nuisance individuals	Reduce safety threat	Year-round	Targeted individual(s)	≤1 flight day/individual	As needed	X	X	X
	Aerial removal	Population reduction	Dec−Mar or other times of year as necessary	Alt A = 0; Alt. B ≈ 90% Alt. C ≈ 75%	Alt B and C: ≤5 flight days per management period, but weather dependent	Annually during population reduction		X	X
	Live capture and euthanize/ dispatch	Population reduction	Year-round	TBD	TBD	As needed		X	X

Action	Element	Purpose	Operational Window	Target[1]	Duration (days)	Frequency	Alt. A	Alt. B	Alt. C
Lethal Removal	Ground removal	Population reduction	Year-round	Alt A. = 0; Alt. B ≤ 20% over duration of plan; Alt. C ≤ 10% over duration of plan	Up to several days per goat	Consider annually during population reduction; as needed in perpetuity at low levels		X	X
Other Actions	Hazing	Reduce safety threat	Year-round	Targeted individual(s)	Several hours to several days	As needed in perpetuity	X	X	X
	Information/ Education/ Outreach	Reduce safety threat from rogue goat; inform public about mountain goat plan/management actions	Year-round	Affected publics	Duration of project	As needed but likely limited	X	X	X
	Area closures	Carcass management; reduce safety threat from rogue goats; human safety near active staging and management areas	Year-round	None	During lethal and non-lethal removal activities	As needed	X	X	X

[1]Target is defined as desired outcome.

Alternatives Considered but Dismissed

Removal of Mountain Goats by Public Hunting. Title 36 Section 2.2 (b) (1) of the Code of Federal Regulations (36 CFR 2.2 (b) (1)) states hunting shall be allowed in park areas where such activity is specifically mandated by Federal statutory law. While the 1950 enabling legislation for Grand Teton National Park allows for the controlled reduction of elk when necessary for proper management of the herd, with the assistance of qualified and experienced hunters deputized by the National Park Service, public hunting is not authorized in Grand Teton National Park's enabling laws. This alternative was dismissed because it would require a major change to Grand Teton National Park's enabling legislation.

Use of Skilled Volunteers to Assist with Ground-Based Lethal Removal of Mountain Goats. The rapid reduction of the park's mountain goat population is vital for the continued existence of the Teton Range bighorn sheep population. The mountain goat population is currently at a size where complete removal or a substantial reduction (as described in this plan) is achievable in a short time frame. However, if no action is taken, the apparent growth rate of this population suggests that mountain goat removal may become more challenging or possibly unattainable after three years. Additionally, the threats of competition and/or pathogen transmission from mountain goats could contribute to the rapid extirpation of the declining population of bighorn sheep.

Compared to the immediate need for the actions described in this plan, most animal removal programs in national parks involve managing native population numbers (e.g. elk and bison) or reducing large populations of nonnative animals over a longer period of time. The expected initial removal of approximately 90% of the mountain goats in the Teton Range within 1−5 years and the subsequent removal of a small number of goats that may remain or repopulate the area would be better achieved using skilled park staff and contractors. Because mountain goats are dispersed in backcountry areas, distant from road access, and seldom seen from park trails, there is little likelihood of successful expeditious control by volunteers on the ground. Thus, there would be little benefit in developing and managing a short-term ground-based skilled volunteer program to remove mountain goats. This alternative was dismissed because it is duplicative when compared to using skilled park staff and contractors to more effectively and efficiently remove the remaining mountain goats from the Teton Range.

Mountain Goat Removal Using Only Non-Lethal Methods. The capture and relocation of mountain goats may not be practical if there is not enough interest from agencies and organizations to accept the number of goats that need to be removed from the park. In addition, given the inaccessible and remote areas where mountain goats reside and low capture efficiency for mountain goats in the Tetons (i.e. large time investment to live capture a single individual) it would be very difficult and costly to safely achieve complete removal using only non-lethal means. An alternative has been retained (Alternative C) that proposes to use a combination of lethal and non-lethal methods to remove mountain goats. This alternative provides greater flexibility for the park to use non-lethal methods whenever possible. This alternative was dismissed because of its inability to resolve the purpose and need for taking action.

Fertility Control. Fertility control has been used in NPS units for population control of several ungulate species (Powers and Moresco 2015). The utility and appropriateness of this tool depends on the objectives for management. With the goal of eliminating exotic mountain goats and limiting adverse effects due to increasing numbers, fertility control could be a useful tool in helping achieve these objectives. Fertility control per se would not eliminate mountain goats from the park nor address possible pathogen transmission, competition, or vegetation concerns, but it could slow the growth rate and reduce the number of mountain goats that need to be removed. However, there is no fertility control agent currently approved for use in mountain goats and no effective delivery technique. Until the aforementioned

technical challenges are addressed, fertility control as a non-lethal technique in the toolbox (e.g., Alternative C) is not feasible. This alternative was dismissed because of its technical infeasibility and its inability to resolve the purpose and need for taking action.

Use of Only Non-Mechanized Transport to Manage Mountain Goats (Wilderness Minimum Requirement). Three options that do not use mechanized transport and temporary installations have been analyzed in the mountain goat management plan wilderness minimum requirement analysis (MRA; NPS 2017) for all alternatives carried forward in this EA. Luring and capturing mountain goats using non-mechanized transport and without the aid of temporary installations (e.g., lures and traps) would not be practicable for the following reasons: 1) Locating and capturing mountain goats on foot within the wilderness would require special expertise in high-elevation technical climbing over extreme terrain and in rapidly changing weather conditions. This would result in an unacceptable safety and health risk to individuals conducting field activities. 2) Ground-based monitoring and lethal removals would not be enough to meet the purpose and need of the EA, as the likelihood of successfully monitoring and removing mountain goats expeditiously would be difficult and improbable to achieve. This alternative was dismissed because of its technical infeasibility and its inability to resolve the purpose and need for taking action.

CHAPTER 3: Affected Environment and Environmental Consequences

This chapter describes the affected environment (existing setting or baseline conditions) and analyzes the potential environmental consequences (direct, indirect, and cumulative impacts) that would occur as a result of implementing the proposed alternatives.

Bighorn Sheep

Affected Environment

Rocky Mountain bighorn sheep are native to parts of Wyoming including the Teton Range in the northwest corner of the state. Historical records from fur trappers and explorers confirm the presence of bighorn sheep in this area. However, no reliable estimates exist for the size of the population historically, but it is thought that the bighorn sheep were more widely distributed and more numerous throughout the Teton Range prior to settlement of the surrounding area (Whitfield 1983). Bighorn sheep numbers declined as pioneers settled the area and by the 1950s the Teton Range bighorn sheep no longer accessed low elevation winter habitats in canyons and valleys on the east and west slopes of the range. Although the specific cause of the decline is not known, it was likely due to a combination of factors including development of low elevation habitats on the flanks of the Teton Range and in the valley bottoms, fire suppression and loss of open habitats, and possibly disease due to large flocks of domestic sheep grazing the west slope of the Teton Range and portions of the park (Whitfield 1983).

Currently, the Teton Range bighorn sheep herd is comprised of two subpopulations that occur in the north and south-central portions of the range (Figure 5; Whitfield 1983, Whitfield and Keller 1984, NPS unpublished data, Courtemanch 2014). The sheep herd occupies much of the higher elevations of the Teton Range, using constricted high-elevation windblown areas during the winter and broader areas of varying elevation during the summer and fall (Whitfield 1984, Courtemanch 2014). In general, bighorn sheep select open areas with good visibility in close proximity to steep and rugged terrain and forage on a

variety of grasses, forbs, and shrubs (Laundré 1994, Shackleton 2013, Courtemanch 2014). Bighorn sheep have high fidelity to seasonal home ranges and are slow to colonize new or currently unoccupied but suitable habitat (Risenhoover et al. 1988). The herd's range lies primarily within the park and on the west slope of CTNF, but it also occupies a small portion of the BTNF on the east slope of the Teton Range. Management of the herd and its habitat is coordinated between NPS, WGFD, and the USFS. The bighorn sheep are considered a core native herd by the State of Wyoming (Wyoming State-wide Bighorn/Domestic Sheep Interaction Working Group 2004), which means they have never been extirpated and repopulated with transplanted bighorn sheep. The USFS and WGFD have special designations for bighorn sheep which the NPS respects. WGFD considers bighorn sheep as a Species of Greatest Conservation Need (WGFD 2017b), which means they warrant increased management attention and funding, as well as consideration in conservation, land use, and development planning. Bighorn sheep are considered a sensitive species on the BTNF and on the Targhee portion of the CTNF. Sensitive species are those for which population viability is a concern.

Winter helicopter surveys have been conducted periodically to assess population numbers and trends. During the three most recent winter surveys (2015−2017) a total of just 57, 46, and 48 bighorns were counted in the Teton Range (WGFD 2015, 2016, and 2017a). Comparatively, the previous helicopter surveys conducted in 2008 and 2010 yielded counts of 96 and 81 bighorns, respectively. Currently the herd is estimated at about 80 individuals (WGFD 2017a). Prior to 2015, population was thought to be approximately 100−125 individuals. The cause of this apparent population decline is unknown. Due in part to its small size, the Teton Range bighorn sheep herd exhibits low genetic diversity and is genetically isolated from neighboring herds (Kardos et al. 2010). The two population segments two segments at the north and south ends of the range do not appear to interbreed with one another (Kardos et al. 2010).

Winter range for the Teton Range herd is currently limited to small areas of windswept alpine tundra, rock, and snow-free krummholz (high-elevation treeline areas of stunted, wind-blown trees) on ridges and slopes generally ≥8,500 feet (Whitfield 1983, Reid and Cain 1996, NPS unpublished data, Courtemanch 2014). Wintering conditions in these areas are extreme due to high winds, low temperatures, deep snow, and little available forage. These high-elevation winter ranges also predispose these bighorn sheep to sources of mortality not usually associated with more typical, low-elevation winter areas. Mortality due to avalanches and falls from cliffs is high, and starvation may also be important during some years (Reid and Cain 1996, Courtemanch 2014, NPS and WGFD unpublished data 2017).

Biologists have long recognized the potential for human disturbance of crucial bighorn sheep wintering areas in the Teton Range. Recent research by Courtemanch (2014) has demonstrated that the Teton Range bighorn herd is adversely affected by winter backcountry recreation. GPS-collared animals avoided areas of suitable winter habitat that experienced backcountry recreation, and animals exposed to high levels of winter recreation exhibited increased daily movement rates compared to animals exposed to low or no winter recreation (Courtemanch 2014). For bighorns that live at high elevation where winter conditions are harsh and deep snow buries forage and adds energetic costs to movements, energy conservation is critical to survival. Consequently, increased movements in response to backcountry activity can cause bighorn sheep to burn calories that are needed simply to survive the winter, resulting in reduced survival or reproductive potential.

To protect some of the most important areas for wintering bighorn sheep, Static Peak and the Prospectors/Mt Hunt complex have been closed to human entry during winter to provide secure wintering habitat. Both areas were known bighorn sheep wintering areas and once popular ski mountaineering destinations. Based on location data from radio-collared bighorn sheep (NPS unpublished data), other important bighorn sheep wintering areas within the park were identified in the early 2000s. However, closures were not implemented then because winter recreation use levels were relatively low at the time and the closures were deemed unnecessary. Since then, winter backcountry use has increased and

recreationists regularly access bighorn sheep wintering areas in the south, and frequently in some areas at the north end of the range.

Bighorn sheep are highly susceptible to pathogens that have been introduced by domestic livestock (particularly domestic sheep) and, consequently, disease (particularly polymicrobial bacterial pneumonia) plays an important role in hindering conservation and restoration of the species in much of its range (Buechner 1960, Wehausen et al. 2012, Manlove et al. 2016, Cassirer et al. 2017). Although all domestic sheep allotments in the Teton Range are now closed (except for an area where sheep are trailed and loaded along Highway 22 west of Teton Pass), domestic sheep still graze in the Snake River Range in Idaho and Wyoming approximately seven miles south of the southern boundary of the park. The existing domestic sheep allotments overlap with mountain goat range and disease testing indicated that mountain goats from the Wyoming and Idaho populations in the Snake River Range are positive for all the pathogens associated with polymicrobial pneumonia. Limited testing of the Teton Range bighorn sheep herd has detected two pathogenic agents indicating the herd may be immunologically naïve (i.e., not previously exposed) to most pneumonia-causing pathogens. However, only 18 animals have been tested since modern disease tests have been available and the missing pathogens could have simply not been detected (Butler et al. 2017).

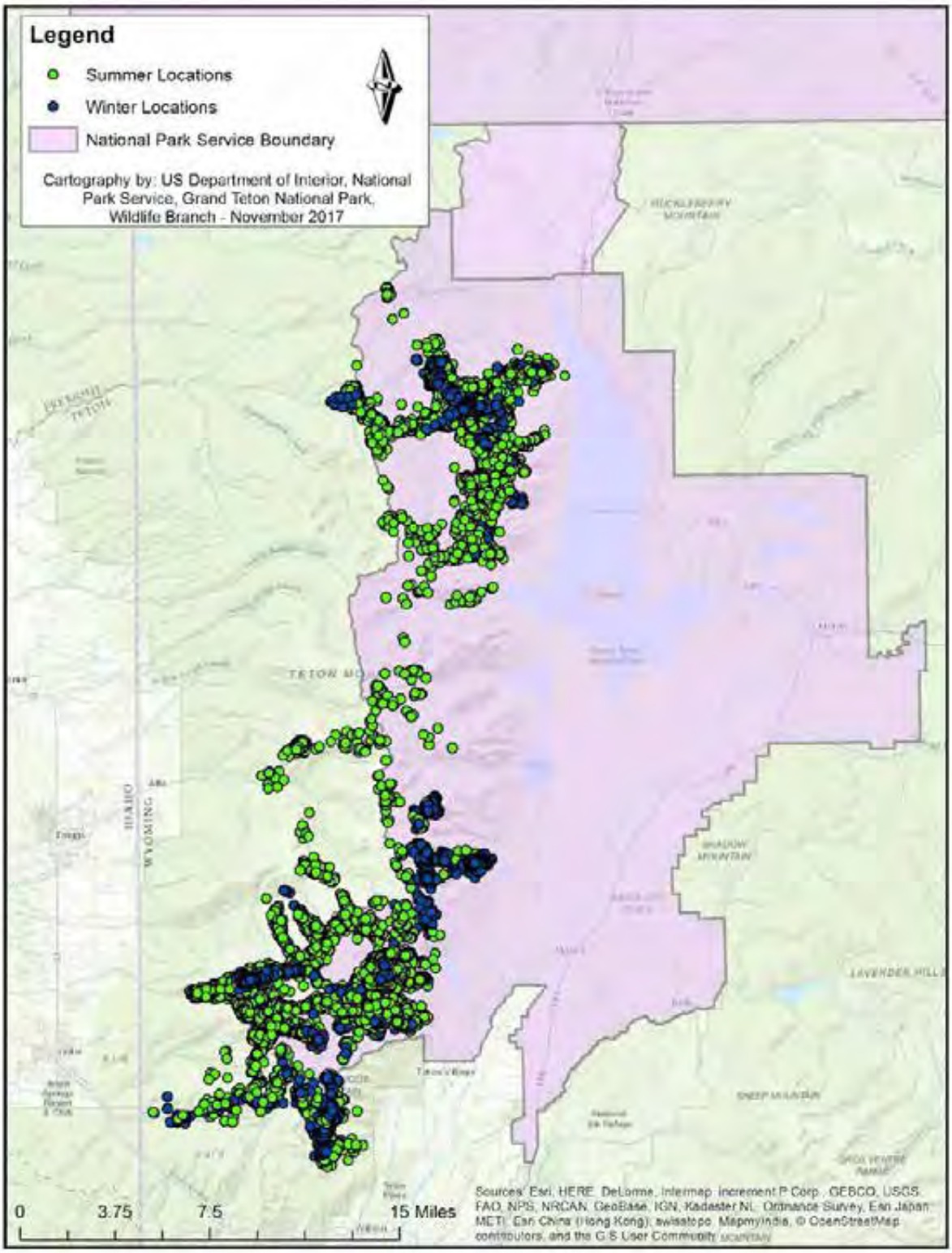

Figure 5. Global-positioning system locations of 28 adult female bighorn sheep that were captured and collared, Teton Mountain Range, Wyoming, 2008−2010. Green dots represent summer locations for all 28 individuals, while blue dots represent winter locations.

Environmental Consequences

Alternative A – No Action

Direct and Indirect Impacts

Under Alternative A, there would be no actions taken to actively reduce the number of mountain goats in the park. With no active management of mountain goats, it is expected that the population would continue to grow rapidly, with occasional population reductions resulting from disease outbreaks, weather conditions, density dependence, or other factors. Continued growth of the mountain goat population increases the likelihood that they will expand out of the current core use area in the central portion of the Teton Range and into areas at the north and south ends of the range that are currently used by and critical to the persistence of bighorn sheep. Given the severely limited extent of available winter range in the Teton Range, expansion of mountain goats onto these ranges would increase overlap between bighorns and mountain goats, and could result in displacement and/or competition adding to the stresses (e.g., energetic stresses, low genetic diversity, etc.) the bighorn sheep herd currently faces. In addition, as greater overlap with bighorn sheep occurs, the potential for transmission of pathogens between the two species is also expected to increase. Because the bighorn sheep population appears to be naïve to common pathogens found in neighboring bighorn sheep populations, an outbreak of pneumonia could be catastrophic for this herd. When a naïve herd of bighorn sheep is exposed to the pneumonia-causing pathogens, a pneumonia outbreak and subsequent die-off involving a significant portion of the herd often occurs. Often bighorn sheep herds see lingering effects (for several years) of a pneumonia outbreak on lamb survival that can prevent the herd from recovering (Cassier et al. 2013, Wood et al. 2017). Depending on the severity of an outbreak, the population could be severely reduced to a point where it is no longer viable or extirpated.

Indirect effects to bighorn sheep from the continued presence of mountain goats include degradation of habitat and impacts to the availability of forage. A recent habitat-modeling study in the GYE found that 75% of historic bighorn sheep observations in the ecosystem fell within areas predicted to be suitable mountain goat habitat (Devoe et al. 2015), supporting general notions that the two species occupy similar environments. Degradation of habitat and forage impacts could increase over time if the mountain goat population continues to grow and expand. DeVoe et al. (2015) estimated that the Teton Range could support a population of approximately 250−400 mountain goats, which is at least 2.5−4 times the current population size. The limited scope of actions proposed under Alternative A would not affect the projected population trajectory of mountain goats in the Teton Range. Thus, the negative impacts to bighorn sheep from the continued growth and expansion of the mountain goat population into new areas are expected to increase under Alternative A as the mountain goat population approaches carrying capacity. Where habitat use and diet between bighorn sheep and mountain goats overlap to a large degree, impacts from competition for habitat and food resources could be severe (Laundre 1990) as research suggests mountain goats may be socially dominant over bighorn sheep (Festa-Bianchet and Cote 2008). This could potentially further limit the habitat availability and quality for bighorn sheep in the Teton Range, which has already experienced dramatic limitations in habitat, especially in winter. Currently, there is limited overlap between mountain goats and bighorn sheep and competition is not likely occurring. However, as the mountain goat population continues to grow and expand into areas important to bighorn sheep in winter or summer, displacement or competition for resources may occur. In the long-term (5−10 years), if bighorn sheep are displaced from traditional seasonal ranges or shift away from areas used by mountain goats to areas of lower quality habitat, survival and reproduction could be negatively affected.

If individual mountain goats exhibited nuisance behavior that presented a threat to human safety, actions could be taken (e.g., hazing, removal, public education, or area closures) to address the issue. Individual

bighorn sheep in proximity to hazing or lethal removal actions could be temporarily (hours to <1 day) disturbed while these activities occur. The need for management actions to address nuisance mountain goat behavior is expected to be infrequent (to date there have been no human-mountain goat interactions that have warranted action) and actions associated with hazing or lethal removal are anticipated to be of short duration (hours to <1 day). Given the current separation between bighorn sheep and mountain goats and implementation of specific conservation measures for bighorn sheep, impacts to individual bighorn sheep are expected to be minimal and population-level impacts are not anticipated.

Actions to monitor mountain goats, including helicopter capture or surveying, could disturb individual bighorns present in the vicinity. In this context disturbance is defined as an activity that changes the regular behavior or routine on an animal (Government of Yukon 2006). The effects of aircraft operations on bighorn sheep can vary with intensity, duration, timing, predictability, proximity of operations to the animal, or location of the animal relative to escape terrain or secure habitat. Alternative A, would have the fewest number of days on which aircraft are used to perform monitoring or support management activities. Helicopter overflight or landing could interrupt normal activity patterns of bighorn sheep (i.e. resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, or stop eating or ruminating. Such impacts, if they occur, are expected to be short-term and limited to the time that helicopters are in the vicinity of bighorn sheep (hours to a few days). Currently, bighorn sheep and mountain goats occur in separate portions of the Teton Range, thus impacts from helicopter captures or surveys of mountain goats to individual bighorn sheep are expected to be minimal and population-level impacts are not anticipated. However, as the mountain goat population grows, distribution expands, and overlap between the goats and sheep increases, disturbance impacts from helicopter-based capture and monitoring activities could also increase, although any impacts are still expected to be temporary and limited to the time that aircraft are in the immediate vicinity of bighorn sheep.

Deploying and maintaining remote cameras at mineral licks would likely displace any individual bighorn sheep present in the vicinity at the time the site is visited. Initial camera deployment can take <1 hour, but subsequent visits usually require <15 minutes on site. Again, any bighorn sheep present would likely leave the area as they detect people approaching. Once humans are no longer present, bighorn sheep would likely resume their prior activities.

Cumulative Impacts

The geographic scope of cumulative impacts for bighorn sheep includes the areas of the Teton Range and adjacent Jackson Hole where the bighorn sheep herd historically occurred. The temporal scope is approximately 20 years, which is the estimated time it may take for mountain goats to fully occupy the Teton Range and reach carrying capacity. Past, present, and reasonably foreseeable future actions under Alternative A that have or could impact Teton Range bighorn sheep both within and outside the park include: trail maintenance, search and rescue operations, fire management activities (including long-term fire suppression), vegetation and exotic plan management, scientific or social science research and monitoring activities, year-round backcountry recreation, human development, ski area management, permitted helicopter skiing, public hunting (including bighorn sheep outside the park), current permitted domestic livestock grazing, past retirement of domestic sheep allotments, and overflights and airport activity.

As a result of past management actions and human activities, the size and geographic distribution of the Teton Range bighorn sheep herd has been reduced and the herd is now genetically isolated from neighboring herds. The amount of habitat available to Teton Range bighorn sheep has been reduced due to human disturbance and fire suppression. The bighorn sheep have lost access to their traditional low elevation winter ranges because of residential, agricultural, or commercial development in the valleys and

as a result of conifer encroachment and loss of seral foraging habitats due to fire suppression throughout the Teton Range. Additionally, ski area development has resulted in the direct loss of suitable bighorn sheep habitat; indirect loss of habitat through avoidance behavior and increased movements of bighorn sheep due to winter recreation that overlaps with important bighorn sheep wintering areas (Courtemanch 2014).

Fire can influence bighorn sheep distribution through changes in habitat conditions (e.g. vegetation type, seral stage, amount and quality of various habitats). Decades of fire suppression has altered natural fire regimes and changed vegetation and wildlife habitat. Continued fire suppression could result in further negative impacts to vegetation and wildlife habitat. Alternatively, decisions to manage wildfires could have long-term beneficial effects to bighorn sheep habitats if sight lines are opened and seral grass/forb habitats are restored. Fire can reduce dense forest growth improving sight lines which allow bighorn sheep to detect and evade predators. Improved forage conditions and increased forage availability also often result from fire and, when realized, may translate to higher survival and reproduction in bighorn sheep. The timing and specific locations of fire events would influence the magnitude and type of impacts and benefits. For example, fire management activities during the lambing season or near important habitat features (e.g., mineral licks, and water features) could displace bighorn sheep from these locations, whereas those occurring under other circumstances could have long-term beneficial effects as noted above.

Retirement of domestic sheep allotments on the west side of the Teton Range have had a beneficial effect on bighorn sheep by reducing the risk of contact and resulting pathogen transmission between domestic and bighorn sheep. However, domestic sheep grazing occurs on USFS lands in the Snake River Range directly south of the Teton Range and mountain goats there test positive for pneumonia-causing pathogens. The potential exists for mountain goats to disperse from the Snake River Range to the Teton Range. Although the likelihood of dispersal is unknown, it is likely related to population size: higher likelihood at higher population size. Although the risk of contact for new goats that disperse is unknown, the impacts of any contacts between mountain goats and bighorn sheep could be significant.

In the Teton Range outside of the park, many wildlife species, such as elk, mule deer, bighorn sheep, mountain goats, and predators, can be hunted. These seasons are managed by WGFD. Hunting in areas close to the park boundary could reduce the numbers of bighorn sheep within the park as these species generally range across political boundaries. However, hunting quotas are typically tied to herd unit objectives, and current harvest objectives for Teton Range bighorn sheep are conservative: 2 licenses for rams have been offered in recent years.

The park performs and authorizes various scientific surveys and research efforts within the action area (Figure 1). These studies have minimal impacts on wildlife and bighorn sheep in particular. These activities provide indirect benefits to wildlife and sheep by increasing the understanding of the status of wildlife populations and other resources of interest in the park. Wildlife monitoring from fixed-wing aircraft and helicopters occur within the action area several times throughout the year. Fixed-wing telemetry and observation flights have low potential to disturb bighorn sheep as these flights occur infrequently, at a time of year when habitat is not limiting, and generally are not over high use bighorn sheep habitats. On the other hand, winter helicopter surveys, helicopter supported search and rescue operations, and non-permitted scenic flight tours have some potential to disturb wildlife if they are encountered along flight paths. Such interactions could result in short-term (approx. ≤1 hour) increases in movement and physiological stress that would subside once the aircraft has passed. Aircraft landing and departing the Jackson Hole Airport typically follow designated flight paths away from the Teton Range, thus are unlikely to directly disturb bighorn sheep. However, incoming and outgoing aircraft and airport operations add to the background noise audible to bighorn sheep in the Teton Range.

Alternative A is expected to increase the likelihood for competition between bighorn sheep and mountain goats, particularly on limited winter ranges, as well as increase the potential for pathogen transmission between the two species. Although, wildland fire use or habitat treatments could have beneficial effects to bighorn sheep, the direct and indirect losses of habitat due to past, present, and reasonably foreseeable activities would continue to add to adverse cumulative impacts. Although some disturbance and behavioral changes associated with cumulative actions (e.g., visitation, some park operations, wildlife monitoring, etc.) would be temporary and small, others have had large-scale lasting impacts that continue to influence the tenuous status of the Teton Range bighorn sheep population. The incremental impacts of Alternative A would contribute substantial adverse impacts to those that are already occurring. If left unmanaged, the mountain goat population could impact the vital rates (i.e., survival/mortality, productivity, population change, etc.) of the bighorn sheep population and, thus, reduce the likelihood of population persistence.

Alternative B – Lethal Removal

Direct and Indirect Impacts

Impacts from monitoring mountain goats including deploying and maintaining remote cameras, helicopter captures, and helicopter based surveys would be the same as described for Alternative A.

Actions to monitor mountain goats, including helicopter capture or surveying, could disturb individual bighorns present in the vicinity. Helicopter overflights or landings could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5 minutes to 30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep would flee if a helicopter makes a direct or close approach (Frid 2003). Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale would be implemented (see Conservation Measures to Reduce or Avoid Potential Impacts section). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through Conservation Measures would reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

No impacts to bighorn sheep are anticipated from the use of low elevation frontcountry staging areas, as these locations are not within habitats used by bighorn sheep. However, short-term (several minutes to several hours), direct adverse impacts to individual bighorn sheep could result from mountain goat lethal removal activities due to noise and disturbance associated with the use of firearms and aircraft. The extent to which these impacts could affect the bighorn population would depend on the degree of overlap between the bighorn sheep and mountain goat populations.

Alternative B is expected to result in an approximately 90% reduction in the mountain goat population of roughly 100 animals (2018 estimate) within 1−5 years. Reduction and ultimate elimination of the

mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. Reductions in these risks could be achieved over a shorter seasonal time frame as well as overall time frame because of the greater efficiencies in lethal removal (minutes) compared to live capture and translocation (hours). Over the course of the population reduction phase (years 1-5), approximately 90-100 mountain goats would be killed and the majority of these carcasses would be left of the landscape. The number of individuals that would be lethally removed each year would depend on available funding and culling efficiency. At a minimum this could be 15-25 individuals annually or up to 75 individuals in the first few years.

In the short-term (several months annually over approx. 5 years), Alternative B would result in numerous carcasses on the landscape, which could result in temporary increases in the number of predators and scavengers for the time carcasses are present. Removal operations are expected to occur in the winter when bears (both black and grizzly) are hibernating. During the winter months, mountain goats generally occur at higher elevations than at other times of year (NPS unpublished data). Given the severe winter conditions and deep snow at these elevations, numbers of potential mammalian scavengers (e.g., wolverine, wolves, mountain lions, coyotes, foxes, etc.) would be low because travel is difficult and other food resources in the mountains are generally lacking. Similarly, numbers of avian scavengers (e.g., bald and golden eagles and corvids) are also expected to be limited that time of year. Carcasses would be relatively aggregated in space and time (e.g. primarily in the central portion of the Tetons where mountain goats occur for several weeks to several months in the winter/spring) and exploited by scavengers opportunistically. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep such a response if not anticipated for several reasons. Scavenger and predator populations typically increase via immigration (individuals moving into an area) or demographically (food surplus leading to improved condition of adults, larger litters, and higher survival of offspring). In mid-winter, the wolverine is the species most likely to be present in the high elevations of the project area where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because mountain goats and bighorn sheep currently occur in spatially distinct areas and the availability of carrion may divert predation away from live prey.

Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated. Reducing the mountain goat population is also expected to benefit the Teton Range bighorn sheep herd by eliminating a major population-level threat. Overall, the effects of Alternative B are expected to be substantial and beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for habitat and forage between bighorn sheep and mountain goats.

Cumulative Impacts

The cumulative impact scenario (geographic and temporal scope, past, present, reasonably foreseeable future actions) for the impacts on bighorn sheep would be the same as those discussed under Alternative A. Although the temporal scope of impacts from Alternative B would be ≤20 years, the mountain goat population reduction activities would mainly be limited to the first 5 years, with the most concentrated efforts to remove 90% of the animals in years 1−3. In later years, occasional actions would remove the few remaining goats, and any new ones that enter the park.

As described for Alternative A, other past, present, and reasonably foreseeable actions in the park and adjacent landscape have had and would continue to have overall adverse effects on bighorn sheep

primarily through the direct and indirect loss of habitat. These impacts influence the current distribution and tenuous status of the Teton Range bighorn sheep population. The potential direct and indirect impacts from Alternative B include short-term disruption of normal behaviors and increased stress in bighorn sheep during monitoring, removal, and/or other management activities. Reducing the mountain goat population is also expected to benefit the Teton Range bighorn sheep herd by eliminating a major population-level threat. Overall, the effects of Alternative B are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for habitat and forage between bighorn sheep and mountain goats. When the beneficial effects of Alternative B are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed by this plan the positive increment expected from Alternative B does not substantially change the overall cumulative impact.

Alternative C – Combination of Lethal and Nonlethal Removal

Direct and Indirect Impacts

Impacts related to management of nuisance mountain goats, lethal removal, and monitoring activities would be similar to those described under Alternative B. The impacts related to non-lethal removal of mountain goats via live capture and translocation would be similar to those described above under Alternative B for helicopter-based captures for monitoring purposes. During the first few years of active management, Alternative C would include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90-100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This would mean that risks to bighorn sheep from the presence of mountain goats would continue to exist until all mountain goats are removed. Because some mountain goats would be live captured and translocated, fewer individuals would be lethally removed over the course of the population reduction phase (years 1-5) and fewer carcasses would remain on the landscape. Potential impacts from carcasses remaining on the landscape would be similar to those described for Alternative B.

Indirect, adverse and beneficial impacts on bighorn sheep from the presence (or lack thereof) of mountain goats would also be similar to those described under Alternative B, although beneficial impacts may take longer to be realized due to the longer anticipated timeline for live removals. Any adverse impacts are expected to be short-term for duration that the mountain goat population persists, while beneficial impacts are expected to be long-term (10−20 years).

Cumulative Impacts

The cumulative impact scenario (geographic and temporal scope, past, present, reasonably foreseeable future actions) for the impacts on bighorn sheep is the same as described for Alternative B. Impacts on bighorn sheep from these past, present and reasonably foreseeable actions would be the same under Alternative C as those described for Alternative A.

As described for Alternative A, other past, present, and reasonably foreseeable actions in the park and adjacent landscape have had, and would continue to have, overall adverse effects on bighorn sheep primarily through the direct and indirect loss of habitat. These impacts influence the current distribution and tenuous status of the Teton Range bighorn sheep population. The potential direct and indirect impacts from Alternative C include short-term disruption (several minutes to hours) of normal behaviors and increased stress in bighorn sheep during monitoring, capture and translocations, removal, or other

management activities. Reducing the mountain goat population is also expected to benefit the Teton Range bighorn sheep herd by eliminating a major population-level threat. Overall, the effects of Alternative C are expected to be beneficial, effectively removing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. When the beneficial effects of Alternative C are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed by this plan, the positive increment expected from Alternative C does not substantially change the overall cumulative impact.

Vegetation and Soils

Affected Environment

The Teton Range rises from the Jackson Hole valley floor (approx. 6,500 feet) to the top the Grand Teton (13,770 feet). Vegetation communities vary across this elevational gradient (Knight et al. 2014). Over 80% of the plant taxa in the park occurs within an elevation range of 7,500 to 11,000 feet. The affected vegetation environment can best be described in terms of vegetation communities – recurring assemblages of vegetation that include, and are characterized, by a suite of species. The Grand Teton National Park 2002−2005 Vegetation Mapping Project Final Report (Cogan, et al. 2005) and its appendices describe a total of 167 plant associations, while the accompanying map is divided more coarsely into 35 vegetation types, 24 of which occur in the project area. These vegetation zones and types are described in more detail below.

High-elevation plants experience harsh climatic conditions and a short growing season. They generally flower and reproduce in a short period of time in mid-summer. If plants are consumed or damaged at this time they will not only be destroyed but will not be self-replacing on the landscape. Winter feeding on senescent plant material removes biomass and alters plant conditions, but has less effect on reproduction than summer use of rapidly growing and reproducing plants.

Nonnative invasive plant species occur in the park, including areas where mountain goats occur. Invasive plants are more common in the lower elevation habitats than the high elevation vegetation types where mountain goats occur.

Soils in the park are described in the Soil Survey Teton County, WY Grand Teton National Park Area (USDA Soil Conservation Service 1982). Soils can be categorized in several ways: parent material, texture, or stability, and vary over the area of interest. The soils classified in the project area (USDA Soil Conservation Service 1982) are a mixture of Rubble land (talus and boulder fields), rock outcrops, and soils which are generally very shallow. Mid-slopes may have deeper soils. Slopes range from gently sloping to steep, thus soils can be highly erosive. More than 90% of the project area is classified as one of two units: the "Rock-outcrop-Rubble land Leighcan," which makes up about two-thirds of the project area, and the "Starman-Rubble land-Midfork" unit makes up about one-third of the area. The project area is 40−45% rock outcrops, 20−25% rubble lands, and 30−40% soil. The soils vary with topographic position with generally thin cobbly soils on ridges, stony sandy loam soils on mid to upper slopes and deeper soils comprised of stony loam or stony clay loam on lower slopes and toe slopes. Poor soil development and frequent soil movement is common throughout the project area.

Alpine vegetation–True alpine vegetation communities occur in the park in locations ≥9,000 feet that are sparsely vegetated. These areas are intermixed with numerous non-vegetated cliffs and rock faces,

boulder fields, and snowfields. Mapped alpine vegetation occupies approximately 32,000 acres, including about 10,000 acres of alpine meadows and limestone pavement vegetation, and approximately 22,000 acres of cliff and talus sparse vegetation. These communities grow in sites with little soil development, subject to harsh weather conditions, and a brief growing season with shifts from water-saturated to drought conditions in a matter of days. These communities are dominated by perennial tufted or mat-forming herbs and by prostrate or ground-hugging shrubs. Dwarf shrublands occur just above treeline, occupy approximately 675 acres, and are dominated by two arctic willow (*Salix arctica)* associations – Arctic Willow-Alpine-Willow/White Marsh-marigold Dwarf-shrubland and Arctic Willow/American Bistort Dwarf-shrubland. These shrub communities occur in mosaics of meadows, tundra, talus communities, barren areas, and bare rock. Mat-forming cushion-plant alpine tundra communities include flowering plants (Rocky Mountain phlox (*Phlox multiflora*), twinflower sandwort (*Minuartia obtusiloba*), creeping sibbaldia *(Sibbaldia procumbens),* Gordon's ivesia (*Ivesia gordonii*), and matted buckwheat (*Eriogonum caespitosum*)), and grasses such as rough bentgrass (*Agrostis scabra*), Parry's rush (*Juncus parryii*), Payson's sedge (*Carex paysonis*), alpine bluegrass (*Poa alpine*), and tufted hairgrass (*Deschampsia cespitosa*). In talus, cliffs and rock crevices plant species including yellow dot saxifrage (*Saxifraga bronchialis),* alpine smelowskia (*Smelowskia calycina),* American rockbrake *(Cryptogramma acrostichoides)*, and alumroot brookfoam *(Telesonix heucheriformis)* are more common.

Treeline vegetation–Treeline vegetation occurs commonly between 9,500−10,000 feet and is characterized by a mosaic of alpine vegetation and/or sub-alpine vegetation, and stunted or krummholz conifer trees which grow prostrate due to the harsh conditions. High wind, low temperatures, low moisture, and poor soil development characterizes the treeline and alpine areas. These "trees" generally reach only 3−4 feet in height with the occasional emergent trunk reaching higher. Dominant tree species include Englemann spruce (*Picea engelmanii*), subalpine fir (*Abies lasiocarpa*), and whitebark pine (*Pinus albicaulus*).

Sub-alpine mixed conifer forest–Sub-alpine forests dominate the landscape from about 7,000−9,500 feet. These forests can be dominated by one or several tree species: lodgepole pine (*Pinus contorta*), Engelman spruce, subalpine fir, and whitebark pine. The most common of these types is referred to as spruce-fir forest, and Engelmann spruce and subalpine fir are often co-dominant. Common understory shrubs include Rocky mountain maple (*Acer glabrum var glabrum*), gooseberry currant *(Ribes montigenum)*, and grouse whortleberry (*Vaccinium scoparium*), and occasionally low-growing common juniper (*Juniperus communialis*). Common forbs include heartleaf arnica (*Arnica cordifolia*), broadleaf arnica (*arnica latifolia),* Hitchcock's smoot woodrush (*Luzula glabrata var hitchcockii),* spike trisetum (*Trisetum spicatum),* western sweetvetch (*Hedysarum occidental),* and goosefoot violet (*Viola purpuea* ssp. *venosa*). In many areas the spruce-fir forest is dense, blocking light, resulting in a relatively unproductive understory. Where whitebark pine is dominant, common understory species also include Ross' sedge (*Carex rossii*) and smooth woodrush (*Luzula piperi*).

Whitebark pine–Whitebark pine occurs primarily within the park's treeline vegetation and sub-alpine conifer forests as described above. At treeline habitats, whitebark pine occurs in scattered copses of stands and is typically stunted and growing prostate as krummholz stands. At lower elevations, whitebark pine occurs within mixed conifer stands and is less prominent at lower elevations due to increase conifer competition. Whitebark pine regeneration will occur throughout the elevational gradient within these zones.

The USFWS has designated whitebark pine as a "Candidate Species" under the Endangered Species Act (ESA) where a proposed rule of the ESA listing has been warranted but precluded from protection due to other priorities (USFWS 2011). As such, whitebark pine does not have ESA protection at this time. However, it is considered a species of concern for the NPS, thus requiring special attention and management consideration where warranted (NPS 2006).

Whitebark pine, throughout its range within the northern U.S. Rocky Mountains, has decreased significantly and it distribution, abundance and survival has been under threat due to a combination of nonnative white pine blister rust (*Cronartium ribicola*), native mountain pine beetle (*Dendroctonus ponderosae*), changes in fire regimes, and potential climate change scenarios (Tomback et al. 2001). In the park, as well as throughout its range in the Greater Yellowstone Area, whitebark pine is monitored to determine trends in the health, reproduction and survivorship of whitebark pine in the ecosystem (Shanahan et al. 2017).

Sub-alpine and montane shrubland–Occurring at elevations from 7,000−9,000 feet, montane and sub-alpine shrublands are generally located on slopes and in drainages. Species co-occur in both the montane and subalpine zones. Avalanche paths and small drainages are frequently dominated by species including Rocky mountain maple, mountain ash (*Sorbus scopulina),* serviceberry (*Amelanchier alnifolia*), huckleberry (*Vaccinium spp*), and in the montane zone small aspen (*Populus tremuloides*). Scrublands dominated by multiple willow species occur along streams and in areas of high moisture.

Sub-alpine herbaceous–Herbaceous meadow communities ranging from 8,000−9,500 feet include a wide range of flowering species. These can grow on slopes, in talus, at the bases of steep rock faces, and on ledges. Common species in these communities include tall forbs such as western aster (*Symphyotrichum ascendens*), subalpine fleabane *(Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium sp*). Rocky outcrops and cliffs are home to species including spike fescue (*Leucopoa kingie*), wallflower (*Erysimum capitatum*), and Whipple's penstemon (*Penstemon whippleanus*). More mesic sites frequently include: alpine laurel (*Kalmia microphylla),* tall fringed bluebells (*Mertensia ciliate*), and shootingstar (*Dodecatheon pulchellum*). Drier and sparsely vegetated montane and sub-alpine slopes are more commonly dominated by forbs including Wyeth biscuitroot (*Lomatium ambguum*), hawksbeard (*Crepis spp.*), silverleaf phacelia (*Phacelia hastate*), and blue penstemon (*Penstemon cyaneus*).

Montane herbaceous meadows–These communities (6,500−8,500 feet) transition smoothly and overlap in composition with sub-alpine herbaceous communities. Mesic montane meadow dominants include tall fringed bluebells, common cow parsnip (*Heracleum maximum*), western coneflower (*Rudbeckia occidentalis*), sticky geranium (*Geranium viscossisimum*), fernleaf licorice-root (*Ligusticum filicinum*), and subalpine larkspur (*Delphinium occidentale*). Drier sites less commonly intergrade with the sub-alpine meadows and include a suite of more pre-dominantly lower elevation species such as arrowleaf balsamroot (*Balsamhoriza sagittata*), blue flax (*Linum lewisii*), yarrow (*Achillea millefolium*), and the suite of grasses, purple onion grass (*Melica spectabilis*), Sandberg's bluegrass (*Poa secunda*), Hood's sedge (*Carex hoodia*), and mountain brome (*Bromus marginatus*).

Montane mixed-conifer forest–Mixed conifer forests of the montane zone are commonly characterized by a shrubby or unproductive understory. Common tree species include lodgepole pine, Douglas fir, and subalpine fir. Understory species frequently include huckleberry (*Vaccinium* species), Geyer's sedge (*Carex geyeri*), Engelmann's aster (*Aster engelmanii*), and heartleaf arnica (*Arnica cordifolia*).

Environmental Consequences

Alternative A – No Action

Direct and Indirect Impacts

Mountain goats currently use different physical and vegetative habitats at varying levels (Schreiner 1994). Mountain goat-habitat analysis in the park and elsewhere indicate that mountain goats primarily use rock outcrops and cliffs, alpine vegetation and treeline vegetation, including whitebark pine stands. To a lesser extent, mountain goats use subalpine conifer, shrubland and herbaceous vegetation, and have shown the least use of montane forest and nonforest communities. Current effects to soils and vegetation from mountain goat presence observed by park wildlife staff on mountain surveys include seasonal herbivory, trailing, and trampling, and wallowing with localized direct impacts on high elevation vegetation and soils.

The mountain goat population would increase in size for the foreseeable future under Alternative A. Current impacts of mountain goats, include direct herbivory on individual plants (e.g., alpine and subalpine grass, forb, shrub and conifer tree species), and bedding and wallowing, which would negatively impact both vegetation and soils. With increasing population size these effects would increase (Houston et al. 1994).

Mountain goats are generalist herbivores and require plant nutrition to survive. They are known to spend most of their lives at high elevation areas, frequenting cliffs and ledges. They return to the same areas for the winter in most years, frequently to the exact locations for multiple years. These foraging behaviors have direct impacts on localized high elevation trees and plants by removing or disturbing them. High-elevation plants experience harsh climatic conditions and a short growing season. They generally flower and reproduce in a brief time in the mid-summer. If plants are consumed or damaged by mountain goats at this time, they will not only be destroyed but would not be self-replacing. Winter feeding on senescent plant material removes biomass and alters plant conditions, but has less effect on reproduction than summer use of rapidly growing and reproducing plants (Houston et al. 1994).

Mountain goat herbivory would affect some plant species more than others and may affect plant community composition. Some species would decrease and others would increase due to a combination of goat preference for certain species and species-specific characteristics, which include varied tolerances to herbivory, and effects of herbivory on regeneration (Houston et al. 1994). Mountain goats would cause greater vegetation impacts in the alpine and subalpine zones than in the montane areas due to the shorter growing season, shallower soils, and substantially more intensive use of these. In the subalpine zone, impacts of wallowing could include damage to and removal of grasses, forbs, and tree seedlings. Whitebark pine and subalpine fir are slow-growing high elevation trees whose seedlings could readily be uprooted by wallowing resulting in mortality and a lack of regeneration success.

Grazing pressure would likely intensify in the more commonly used habitats and in habitats that remain snow-free (e.g., rock outcrops, cliffs, and south-facing canyon walls). Tree and species that grow in these harsh conditions are likely to be most impacted and may not be able to maintain the population sizes in which they presently occur. As mountain goats are known to return to the same wintering sites year after year (Smith 2014), it is likely that localized areas would experience greater impacts.

An assessment of mountain goat locations by time and vegetation type (NPS unpublished data 2017) indicates that mountain goats spend over 45% of their time in areas of rock outcrops and cliffs, 23% in

Krummholz whitebark pine woodlands, and the remaining time in alpine herbaceous and other vegetation types. In particular, high elevation vegetation receives disproportionately higher use by mountain goats, due to animals seeking shelter in the harsh upper subalpine to alpine environments.

Soil effects would include erosion and compaction, which reduces available soil for plant growth. This decreases the potential for recolonization by native tree and other plant species, and likely decreases plant populations in the areas of high mountain goat use.

In addition to herbivory, trailing, and trampling, wallowing is mountain goat behavior with direct impacts on native vegetation and soils. Wallowing removes soil surface layers and that decreases water-holding capacity and the nutrients available for vegetation, and increases soil aeration and surface temperature. The soil disturbance from mountain goat wallowing provides less stability for plant regeneration. These changes to the soil can cause major shifts in plant community composition around wallow edges (NPS 1995).

Each mountain goat wallow results in approximately 20 square feet of vegetation removed, which results in exposed ground surface and disturbances to bare mineral soil (Festa-Bianchet and Côté 2008). This condition removes vascular and non-vascular plant material resulting in no growth, no photosynthesis, and an open area available for colonization by other plant species, native or nonnative. Seeds carried on the hooves or fur of animals, or by the wind are readily introduced to these areas. Increased erosion would result from exposure of the soil surface. The current number of goat-created wallows is unknown. However, it is anticipated that the estimated number of wallows would increase as the population expands proportionately under Alternative A.

Monitoring/management activities under Alternative A would include some use of artificial baits and helicopter-assisted capture of mountain goats for radio-collaring for future monitoring or to remove nuisance animals for human safety. These sites occur within the high-elevation vegetation types and can range from 400−3,600 square feet. The use of artificial baits (mineral licks) to attract mountain goats for monitoring, common to all alternatives, would likely result in increased bedding, trampling, and trailing effects on soils, and increased localized herbivory in one to two areas in the alpine zone which are likely to require decades to recover native plant community functions. Helicopter landings would target snowfields in the backcountry and existing staging areas/helispots to avoid affecting undisturbed vegetation. Backcountry landing locations would be recorded to facilitate any revegetation that might be needed, and would not be used repeatedly so any ground or vegetation disturbance is expected to be minimal.

Whitebark pine would continue to be impacted as mountain goats trample, wallow, and rub trees within the high elevation treeline and krummholz habitats. Impacts, as described above, from herbivory, trampling, and soil erosion and disturbance has occurred in and around whitebark pine stands. Under Alternative A, impacts from trampling and wallowing would become more prevalent as mountain goat populations increase, which would result in diminished vigor, abundance and survivability in whitebark pine at the localized level.

Overall, Alternative A would result in continued and increased adverse impacts on high elevation vegetation and soils due to higher mountain goat numbers and resultant increases in herbivory, as well as trampling, soil erosion, and disturbance associated with bedding, wallowing, and rubbing. The results of these localized impacts would increase the area of bare ground, decrease the abundance of native plant communities, and potentially lead to increase of invasive vegetation in the alpine and treeline habitats of the park. These negative impacts would increase over the long term as the mountain goat population grows. Vegetation removal and damage would be more severe in the high elevation areas goats currently prefer, and more areas would be affected as their range expands. The impacts would be geographically

localized and variable on the high elevation vegetation habitats where mountain goats occupy, specifically, rock outcrops, and alpine vegetation. Whitebark pine would be impacted as mountain goats trample, wallow tree-rub within the high elevation treeline and krummholz habitats.

Cumulative Impacts

Under Alternative A, the geographic scope of the impacts on vegetation and soils is the Teton Range alpine and subalpine environments where goats live, as well as areas near frontcountry staging areas/helispots. The temporal scope is the approximately 20-year life of the plan. Past, present, and reasonably foreseeable future human actions in the park that would have cumulative impacts on plants and soils include the impacts of park visitors and staff traveling primarily off-trail, vegetation monitoring and research activities, trail maintenance activities, and herbivory and trampling of vegetation by pack stock and other wildlife species. Introduction and proliferation of nonnative invasive plant species would occur within the park and the surrounding areas that impact soils and native vegetation. Collectively, all of these actions have had and would continue to have adverse cumulative impacts on vegetation and soils.

As previously described, the direct and indirect impacts of Alternative A on vegetation and soils, including krummholz and whitebark pine stands, would result in continued and increased adverse impacts on high elevation vegetation due to higher mountain goat numbers and resultant increases in herbivory, as well as trampling, soil erosion, and disturbance associated with bedding, wallowing, and rubbing. When the effects of the alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils would continue to be adverse. The incremental impacts of the alternative would contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the alternative would contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Alternative B – Lethal Removal

Direct and Indirect Impacts

Under Alternative B the impacts of nonnative mountain goat herbivory, trampling, bedding, and wallowing would be expected to decrease incrementally as the population of mountain goats in the project area decreases. This would improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, unhindered by mountain goat herbivory, and soil disturbance. The diminishing of goat-caused disturbance and bare ground would also lessen the potential of nonnative plant species introduction. Similarly, as mountain goats and their impacts are diminished with incremental removal, high elevation whitebark pine and krummholz habitats would benefit with fewer and eventually no mountain goats trampling, wallowing and foraging within these habitats, thus supporting the perpetuation of native plant communities and processes. Baiting and capturing, as described in Alternative A, would be intensified briefly during goat removal operations. However, this short-term localized activity would cause minimal impact to native high elevation vegetation and soils.

Cumulative Impacts

Under Alternative B, the geographic scope and the past, present, and reasonably foreseeable future actions that adversely impact vegetation and soils would be similar to those described under Alternative A.

As previously described, the direct and indirect impacts of Alternative B on vegetation and soils, including krummholz and whitebark pine stands, would gradually result in a beneficial effect on high elevation vegetation. As the mountain goat population is reduced under this alternative, goat use of herbivory, trampling, soil erosion, and disturbance associated with foraging, bedding, wallowing and tree running would decrease incrementally. When the effects of the alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils would be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative would contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the alternative would contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under Alternative C, there would be additional activity associated with increase handling of mountain goats in this alternative that would lead to more sites where localized vegetation would be affected. The removal of mountain goats would reduce adverse impacts on soils and native plant communities in the alpine and sub-alpine zones. Herbivory, wallowing, and soil compaction would be decreased, though not as rapidly when utilizing only lethal removal techniques. Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact would be short-term (1 to 3 years to allow for impacted vegetation to recover).

Actions under Alternative C would lead to diminishing adverse impacts and would also have localized beneficial long-term effect on high elevation vegetation and soils: it would reduce or eliminate mountain goat presence and diminish the impacts of nonnative mountain goat herbivory, trampling, and wallowing, thus supporting the perpetuation of native plant communities and processes. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats would receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Cumulative Impacts

Under Alternative C, the geographic scope and the past, present, and reasonably foreseeable future actions that adversely impact vegetation and soils would be similar to those described under Alternative A.

As previously described, the direct and indirect impacts of Alternative C on vegetation and soils, including krummholz and whitebark pine stands, would gradually result in a beneficial effect on high elevation vegetation. As the mountain goat population is reduced under this alternative, goat use of herbivory, trampling, soil erosion, and disturbance associated with foraging, bedding, wallowing and tree running would decrease incrementally. When the effects of the alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils would be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative would contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the alternative would contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Wilderness Character

Affected Environment

The mountain goat management area is located within areas identified as recommended, potential, or eligible for wilderness designation (Figure 1). The areas include approximately 143,000 acres in the park recommended in 1978 to Congress, and approximately 21,500 acres in the parkway, determined eligible by the National Park Service Director in 2013.

The impacts of each of the alternatives are based on the proposed mountain goat management plan wilderness MRA (NPS 2017) which focuses on the five qualities of wilderness character. Together, the five qualities are used to monitor how stewardship actions, impacts from modernization, and other changes occurring outside of a given wilderness area affect the wilderness area over time (NPS 2015a).

1. **Untrammeled:** *Wilderness is essentially unhindered and free from modern human actions that control or manipulate the community of life.*
2. **Natural:** *Wilderness maintains ecological systems that are substantially free from the effects of modern civilization.*
3. **Undeveloped:** *Wilderness retains its primeval character and influence, and is essentially without permanent improvements or modern human occupation.*
4. **Solitude or Primitive and Unconfined Recreation:** *Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation.*
5. **Other Features of Value:** *Wilderness may also contain other features of scientific, educational, scenic, or historical value.*

The **solitude or primitive and unconfined recreation** wilderness character analysis takes into consideration impacts on natural soundscape and visitor use and experience within wilderness. These two impact topics are included in the analysis below.

The **other features of value** within the wilderness consists of the Teton Range and surrounding lakes, Native American sacred areas and archeological sites, and historic trails and patrol cabins constructed by the Civilian Conservation Corps (NPS 2015a). Mitigation measures would be in place to ensure these other features of value are not adversely affected by the actions described in the alternatives. Therefore, the **other features of value** in wilderness character quality is not carried forward in the following impact analysis.

The following impact analysis pertains to the park wilderness areas for ≥20 years.

Environmental Consequences

The impacts described for each of the alternatives take into account the use of helicopters and fixed-winged aircraft (collectively called aircraft flight operations) and small temporary installations for the luring, capturing, and handling mountain goats and bighorn sheep. An alternative that does not utilize mechanized transport and installations was analyzed in the wilderness MRA and dismissed in the "Alternatives Considered but Dismissed" section of this EA.

Alternative A – No Action

Direct and Indirect Impacts

Under this alternative, it is anticipated that field activities would occur for ≥20 years. This alternative would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live-capturing mountain goats for monitoring purposes and the disposal of carcasses if animals are seriously injured during implementation of non-lethal monitoring activities. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to an estimated ≤20 administrative flight operations per year, the use of small installations (baits) to lure and capture mountain goats, and the placement of collars and/or other tracking devices to monitor mountain goat locations. Direct and indirect impacts from field activities would be ≥20 years due to the existence of lures and tracking devices in wilderness. This alternative would have a negative effect on the **natural** quality of wilderness because mountain goats would continue to inhabit and reproduce in wilderness. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation** quality of wilderness because the occurrence of aircraft flight operations and other field activities would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative A, wilderness character (collectively the wilderness qualities described above) would continue to be adversely affected over the long-term by the ever-increasing nonnative mountain goat population. This effect would persist as long as mountain goats are present in park wilderness. The short-term effects resulting from monitoring activities would exacerbate these effects, because these monitoring actions do nothing to remove the mountain goat population.

Cumulative Impacts

The NPS monitors wilderness character in the park wilderness areas to better understand and respond to cumulative impacts. Past, present, and reasonably foreseeable future actions that adversely impacts the five wilderness character qualities include a variety of actions undertaken by the NPS or by individuals or groups authorized under a special use permit or other approval. Administrative actions undertaken by the NPS within wilderness include activities that intentionally manipulate native and nonnative (exotic) vegetation and wildlife (native plant restoration, capturing and collaring wildlife, and using herbicides), and wildland fire management; utilize mechanized transport, motorized equipment, and structures and installations; and inventory, monitor, and research of the wilderness resource. Authorized activities routinely conducted by individuals and groups within wilderness that require a permit or other approval include backcountry camping, guided services, and commercial filming. Unauthorized visitor activities that occasionally occur within wilderness include backcountry camping in areas outside of designated camping zones or sites, guided services, commercial filming, and the intentional or unintentional collection or destruction of natural and cultural resources. These administrative and authorized activities would continue to have negative effects on the untrammeled, natural, undeveloped, and solitude or primitive and unconfined recreation wilderness character qualities. The duration of these effects would vary by season and year, but are expected to remain in the distant future (multiple decades) as long as these activities are permitted to continue to occur in wilderness.

The 2015 wilderness character monitoring baseline data value for authorized administrative flight operations in the wilderness is 47 operations per year. These operations would occur annually within the project area for wildlife research and monitoring; search and rescue operations; flight training; supply and infrastructure transport; trail, bridge, and cabin maintenance projects; and fire surveillance and suppression (NPS 2015a). In addition to these recurring administrative flights, ≤20 mountain goat-related aircraft operations would occur annually to monitor distribution, movement, demographics, and population numbers; conduct disease testing; and when needed, remove animals due to threats to visitor

and employee safety. An increase of 15% or more in the number of authorized administrative flight operations above the baseline number (seven additional operations per year) would be considered an adverse cumulative effect on the undeveloped quality of wilderness because the number of aircraft activities, especially during the winter months, would be noticeable by visitors. Any increase to the number and extent of visitor behavior restrictions, such as temporary area closures, would have an adverse cumulative effect on solitude or primitive and unconfined recreation quality of wilderness because the additional closures would likely affect more visitors. Conversely, the removal of all mountain goats from wilderness would have a beneficial cumulative effect on the natural quality of wilderness (NPS 2015a) because the nonnative species would be removed from wilderness.

Under Alternative A, the increment contributed by the direct and indirect impacts would result in no change in the cumulative impacts for the **untrammeled** quality in wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts of leaving goats in place would have an adverse cumulative effect on the **natural** quality of wilderness. The increment contributed by the direct and indirect impacts of ongoing authorized administrative flight operations up to 20 per year over the 2015 baseline of 47 operations would have a cumulative adverse effect on the **undeveloped** quality of wilderness. The increment contributed by the direct and indirect impacts of anthropogenic noise on the natural soundscape from the additional authorized administrative flight operations per year would have a cumulative adverse effect on the **solitude or primitive and unconfined recreation** quality of wilderness. Taken together, when the adverse effects of Alternative A are combined with the collective effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on wilderness character (collectively the wilderness qualities described above), would remain adverse. The incremental impact of Alternative A would substantially change the overall cumulative impact because of the ever-increasing nonnative mountain goat population.

Alternative B – Lethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to lethally remove goats would continue for ≥20 years. The lethal removal alternative would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats for monitoring purposes and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤35 administrative flight operations per year for lethal removal and monitoring activities, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. This alternative would have a positive effect on the **natural** quality of wilderness because exotic mountain goats would be removed from wilderness. This alternative would have a negative effect on the natural quality of wilderness because carcasses would be disposed in wilderness. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation** quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative B, wilderness character (collectively the wilderness qualities described above) would be mostly adversely impacted during the fall and winter months when lethal removal and monitoring activities occur. However, this short-term impact would diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

Cumulative Impacts

The NPS administrative actions, authorized and unauthorized visitor activities, and wilderness character monitoring 2015 baseline data explanation are the same as described above in Alternative A.

The increment contributed by the direct and indirect impacts would be slightly greater in the cumulative impacts for the **untrammeled** quality of wilderness because of the short-term (during scavenging and decomposition) presence of mountain goat carcasses. The increment contributed by the direct and indirect impacts would have a substantial cumulative beneficial effect on the **natural** quality of wilderness because mountain goats would be lethally removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations (days of flights) up to 35 per year over the 2015 baseline of 47 operations would have a noticeable cumulative adverse effect on the **undeveloped** quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise would have similar short-term and long-term adverse cumulative effects on the **solitude or primitive and unconfined recreation** as those described for the undeveloped quality of wilderness. Potential temporary area closures would have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), Alternative B would substantially change cumulative effects for the better.

Alternative C – Combination Lethal and Nonlethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to lethally remove goats would continue for a period of ≥20 years. The lethal removal alternative would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the undeveloped quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural** quality of wilderness because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful This alternative would have a negative effect on the **solitude or primitive and unconfined recreation** quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly impacted during the fall and winter months when lethal removal and monitoring activities

occur. However, this short-term impact would diminish as the mountain goat population is removed or greatly reduced after the first one to five years resulting in a long-term benefit on wilderness character.

Cumulative Impacts

The NPS administrative actions, authorized and unauthorized visitor activities, and wilderness character monitoring 2015 baseline data explanation are the same as described above in Alternative A.

The increment contributed by the direct and indirect impacts would result in no change in the cumulative impacts for the **untrammeled** quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts would have a substantial cumulative beneficial effect on the **natural** quality of wilderness because mountain goats would be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations would have a noticeable cumulative adverse effect on the **undeveloped** quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve human created noise would have similar short-term and long-term adverse cumulative effects on the **solitude or primitive and unconfined recreation** as those described for the undeveloped quality of wilderness. Potential temporary area closures would have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), Alternative C would substantially change cumulative effects for the better.

CHAPTER 4: Consultation and Coordination

In May 2013, the NPS sent letters to Wyoming Game and Fish Department (WGFD), Idaho Fish and Game Department, the US Forest Service (BTNF and CTNF), and the US Fish and Wildlife Service (USFWS). The letters announced the park intention to develop a mountain goat management plan and environmental assessment, and requested feedback on the proposal. Responses included support of the concept of controlling mountain goats in the park, the wish to be involved in further discussions if relocation outside the park is analyzed, interest in learning about NPS strategies to deal long-term with mountain goats that move into the park in the future, concern about potential disturbance to Teton Range bighorn sheep if an action alternative is selected, interest in better understanding the disease implications for bighorn sheep if the no action alternative is selected, and desire to work with the park analysis team on potential effects of the alternatives on adjoining National Forest System lands. During development of this plan, park staff have continued to coordinate with WGFD biologists regarding the status and management of mountain goats outside the park.

The park obtained an official list of endangered species from the USFWS Information, Planning, and Conservation System (IPAC) website (https://ecos.fws.gov/ipac/location/2FZ7E4JCV5FXXPR353WXKJ4USQ/resources) on 1/31/2017. Consultation will be initiated upon public release of the EA.

Public scoping to assist with the development of this document began on November 12, 2013 with a press release to media outlets and a letter (sent to approximately 450 interested parties, including individual members of the public, state and federal agencies, local town government, and non-government organizations). The public was directed to the NPS Planning, Environment, and Public Comment (PEPC) website for information, and asked to comment, identify key concerns, and provide ideas about how best to manage mountain goats in the park. The park received 22 correspondences during the public scoping comment period. Substantive comments included recommendations for the NPS to work closely with other agencies, to provide public education and outreach, and to focus on ecological integrity versus invasive species management; and concerns about the Teton Range bighorn sheep population, and about mountain goats continuing to come into the park after eradication efforts.

The park sent letters to 24 affiliated tribes (Coeur d'Alene Tribe of the Coeur d'Alene Indian Reservation; Assiniboine and Sioux Tribe of the Fort Peck Reservation; Comanche Nation, Oklahoma; Confederated Salish and Kootenai Tribes of the Flathead Reservation, Montana; Confederated Tribes of the Colville Reservation; Fort Belknap Indian Community of the Fort Belknap Reservation of Montana; Shoshone Tribe of the Wind River Reservation; Confederated Tribes of the Umatilla Indian Reservation; Crow Tribe; Arapaho Tribe of the Wind River Reservation, Wyoming; Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation; Blackfeet Tribe of the Blackfeet Indian Reservation; Shoshone-Bannock Tribes of the Fort Hall Reservation; Yakama Nation; Burns Paiute Tribe; Kiowa Indian Tribe of Oklahoma; Apache Tribe of Oklahoma; Nez Perce Tribe of Idaho; Rosebud Sioux Tribe; Kootenai Tribe of Idaho; Oglala Sioux Tribe; Standing Rock Sioux Tribe; and Yankton Sioux) in late 2013 and early 2014. The letter, as well as emails and telephone calls, informed them about the developing plan/EA, summarized how exotic mountain goats came to be in the park, and asked to hear concerns and ideas. Five tribes indicated they would like to be listed as interested parties and continue to hear from the park about the management plan. Subsequent letters were sent to the Tribes on August 2, 2018 requesting specific feedback on the alternatives and potential resource impacts. Tribal consultation is continuing.

The park's National Historic Preservation Act (NHPA) Section 106 Coordinator contacted the Wyoming State Historic Preservation Officer (SHPO) on April 6, 2018. The park's Coordinator and SHPO agreed

that the proposed actions described in this plan/EA would have "no potential to cause effect" on cultural resources. This informal determination and concurrence has been documented in writing for the administrative record. Archeological resources, historic structures, and cultural landscapes have been dismissed as impact topics.

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GRTE Mountain Goat Management Plan FONSI (RD S.pdf

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

16 September 2019

Gopaul Noojibail
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Date

Approved:

9/27/19

Palmer L. Jenkins
Acting Regional Director, National Park Service Regional Office
Serving Department of Interior Regions 5, 6, 7, 8, & 9

Date

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or substantially reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) to rapidly remove non-native mountain goats from the park by lethal and non-lethal (live capture and translocation) removal methods with modifications to include the use of qualified volunteers to assist in lethal removal activities, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to reduce non-native mountain goats within the park using lethal and non-lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within areas managed as wilderness.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and

other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; (3) the field conditions present to successfully transport carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat. Although the donation of the mountain goat carcasses was not analyzed in the EA, it does not change the environmental impacts described in the EA.

Management Framework

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible by lethal and non-lethal methods. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to monitoring and removal, which will occur year round as needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park from any direction and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

Lethal Removal

Mountain goats will be dispatched using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct (use of firearms) lethal removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized on site. Animals will be dispatched by trained personnel following established and approved guidelines from the American Veterinary Medical Association (AVMA).

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based lethal removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are

unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

Use of Qualified Volunteers

The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the “Use of Volunteers for Wildlife Management in Parks,” and Director’s Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Non-Lethal Removal (Live Capture and Translocation)

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Mountain goats could be captured and translocated over the course of 1−5 years primarily between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to when lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and likely to be in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture

efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

Live capture operations could occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the AVMA. After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park.

Artificial Baits

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

Helicopters and Firearms

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

Carcass Disposal

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

Temporary Closures

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

Mountain Goat Monitoring

As needed to monitor or improve the success of control efforts, monitoring activities will include fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. It may be necessary to temporarily capture (helicopter-based), radio-collar and/or mark with paint goats prior to releasing them for the purpose of tracking them to a more suitable location and/or time for removal.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

If mountain goats are captured and released, park-specific capture protocols approved by the NPS veterinarian will be followed. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured in any season. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

Education and Interpretation

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

Wilderness Character Monitoring

Park wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

Cooperation with Land and Wildlife Managers

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two

hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

National Historic Preservation Act

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

Endangered Species Act

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species list from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

Tribal Consultations

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identify ten criteria for determining whether the selected action will have a significant impact on the human

environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils (including whitebark pine), and wilderness character; however, no potential for significant adverse impacts was identified.

Bighorn Sheep

Implementing the selected alternative may cause short-term (several minutes to hours) disruptions of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to the bighorn sheep population will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

When the adverse and beneficial effects of selected alternative are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed by this plan, the benefit expected from implementing the selected alternative will not significantly change the overall cumulative adverse impact on bighorn sheep.

Vegetation and Soils

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work may lead to some impact on soils and vegetation where

mountain goats are present as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. It’s anticipated these flight operations will occur ≤ 25 days per year, with ≤ 10 landings annually. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures may affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve

human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2) (c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g., propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park cultural resource specialist will be contacted for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2 individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place).

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored as needed and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.

- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
    - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
    - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.
    - All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Viola purpurea* ssp. *venosa*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4) is revised by removing a reference to "tall forbs:"

> Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

> This condition removes native vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination of Lethal and Non-Lethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Year	**Number Tested**	**Lkt+[1] B. trehalosi[2]**	**M. haemolytica[3]**	**Lkt+ M. spp.[4]**	**P. multocida[5]**	**M. ovi[6]**
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, the capture and transport of family groups (adult females accompanied by young of the year) would occur when possible. Since previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for goats orphaned during translocation, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing them without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain

goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts in Olympic National Park (2018–19), as they have translocated hundreds of mountain goats. No holding or processing facilities are anticipated; as noted on page 17 of the EA, captured mountain goats will be transported by helicopter to frontcountry staging areas, where they will be transferred to approved land-based transport. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the

ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several

modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment.

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of “specific conservation measures” the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states “given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…” The conservation measures this sentence refers to are found on pages 22–25 in the

mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave National Parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified. The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species' partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants, impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

Mountain goats wallow in particularly sensitive soils - high elevation, very shallow, readily disturbed with a short growing season; therefore, colonization is slow. The mountain goats are also known to use the same winter sites for many years so repeated disturbance damages soils.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to

protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (see response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park.

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the

plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside of the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a response is not anticipated. In mid-winter, the wolverine is the species most likely to be present

in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. It’s anticipated these flight operations will occur ≤ 25 days per year, with ≤ 10 landings annually. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

From NPS.gov_ Mountain goat removal.pdf

From: Susan (Sue) Consolo-Murphy
To: GRTE Info, NPS
Cc: denise_germann@nps.gov; David Gustine
Subject: From NPS.gov: Mountain goat removal
Date: Wednesday, October 23, 2019 10:01:36 AM

The plan said the park would develop a program to use skilled volunteers and this will take some time to do and share with the public, so for now that's the answer for any such questions.

Sent from my iPhone

On Oct 23, 2019, at 9:08 AM, GRTE Info, NPS <grte_info@nps.gov> wrote:

> Hi Sue, are you able to respond to this gentleman? Do you know yet how the management program will be finding volunteers for the mountain goat removal? I'd be curious to know more, especially if folks start asking here at the permit desk. Thanks! scott
> Grand Teton National Park
> John D. Rockefeller, Jr. Memorial Parkway
>
> For more information:
> Visit our website: *https://www.nps.gov/grte/index.htm*
> or download the official *NPS Grand Teton* app
>
> 307-739-3309 (Moose)
> 307-739-3508 (Colter Bay)
>
> ---------- Forwarded message ---------
> From: <no-reply@nps.gov>
> Date: Tue, Oct 22, 2019 at 8:59 PM
> Subject: From NPS.gov: Mountain goat removal
> To: <grte_info@nps.gov>
>
> Email submitted from: mitch@trinityepc.org at /grte/contacts.htm
>
> Use mitch@trinityepc.org to reply to this message
>
> Category: Other
>
> Hi there, I just read that you guys are beginning to remove mountain goats from the park. I am an avid hunter (I'm going to colorado tomorrow for an elk hunt) and I was wondering if it was possible to draw a tag for a mountain goat for the conservation effort. Please let me know. I am a very experienced hunter, and would love the opportunity to pursue this animal.

Re_ Mountain goat management in OLYM.pdf

From:	Gustine, David
To:	Happe, Patricia
Subject:	Re: Mountain goat management in OLYM
Date:	Thursday, November 7, 2019 2:06:35 PM
Attachments:	DELIBERATIVE_GRTE_MOGO_draft_qual_vols_7-Nov-19.docx

HI Patti-

Well, we're kind of in the same boat as you -- we just got our FONSI signed in early Sep and are in the midst of implementing the early stages of our MOGO plan -- which will include qualified volunteers at a very small scale, maybe next fall. So we haven't finalized the program framework yet or implemented, so I'm not sure how helpful I might be. Sarah Dewey and I have certainly thought a lot about it, maybe that's what Jenny was suggesting! We do have a loose preliminary framework for the program that I can share -- see attached. We'll be filling in the details over the next few months. I could really see benefit in trying to "sync up" these programs as much as possible, at least in design. If you're up for a chat, I might be able to swing some time this afternoon--I'm off tomorrow.

dave

On Thu, Nov 7, 2019 at 11:59 AM Happe, Patricia <patti_happe@nps.gov> wrote:

> HI Dave,
>
> We are about to transition from live capture and translocation here, to lethal removal. The first step in that process is going to be a ground based operation with volunteers.
>
> I am just starting to plan that phase of the operation, and asked Jenny Powers who should I talk to within the NPS that has experience with this sort of an operation, and she suggested I talk to you.
>
> Are you available for a phone call anytime soon? If so, please let me know.
>
> thanks
>
> --
> Patti
>
> Patricia Happe, PhD
> Wildlife Branch Chief
> Olympic National Park
> 600 E Park Ave
> Port Angeles, WA 98362
> 360-565-3065

--

Dave Gustine, PhD
Supervisory Wildlife Biologist
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DELIBERATIVE_GRTE_MOGO_draft_qual_vols_7-Nov-.pdf

DELIBERATIVE - NOT FOR DISTRIBUTION

Proposed skilled public volunteer program to assist in the removal of mountain goats in GRTE

Purpose of this document: Provide park leadership a draft framework for a potential skilled volunteer program to assist in the removal of non-native mountain goats.

Objective of a potential skilled volunteer program: Use skilled volunteers to assist in rapid removal of mountain goats from Grand Teton National Park while minimizing effects to native resources (especially bighorn sheep) and other park visitors.

(b) (5)

[redacted]

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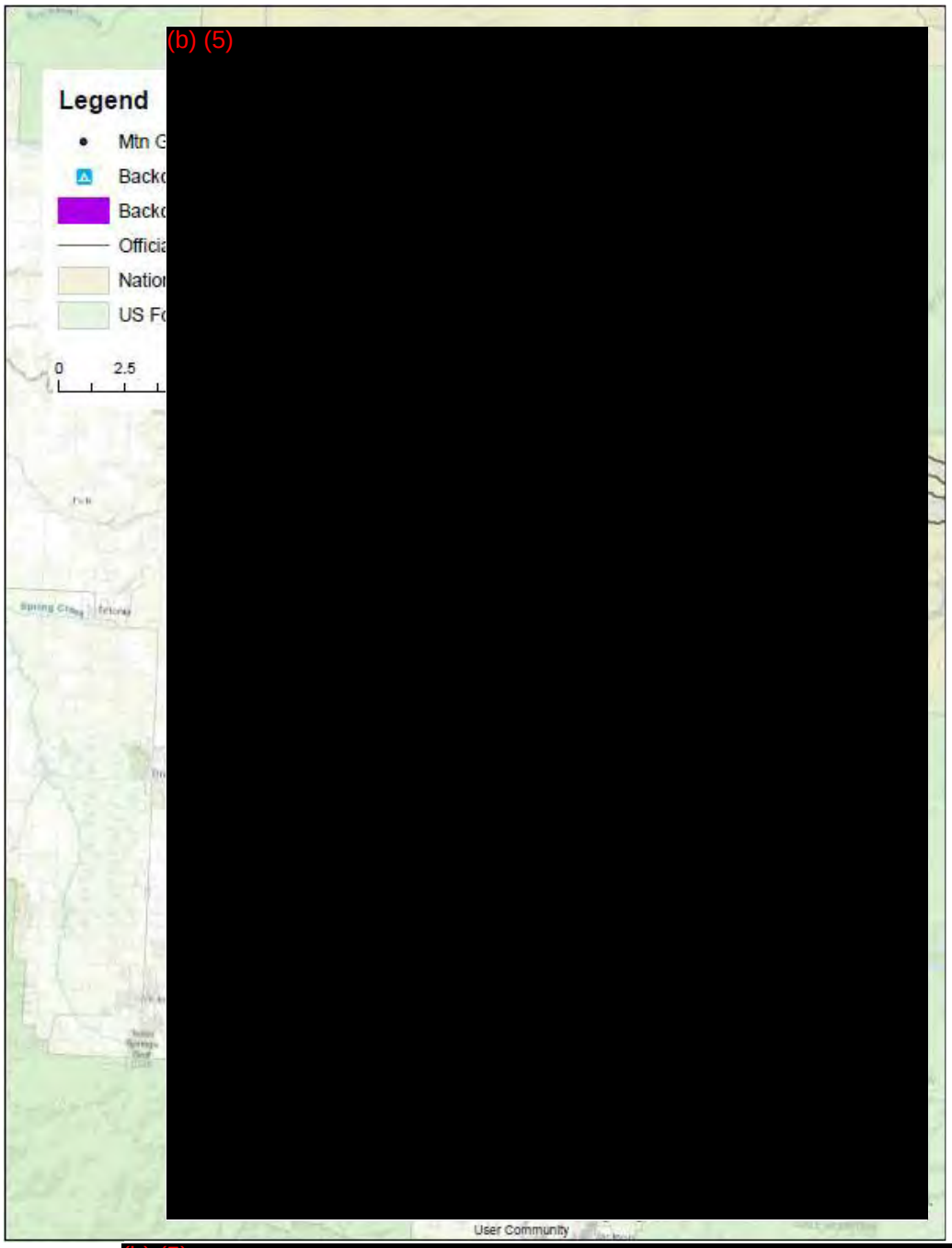
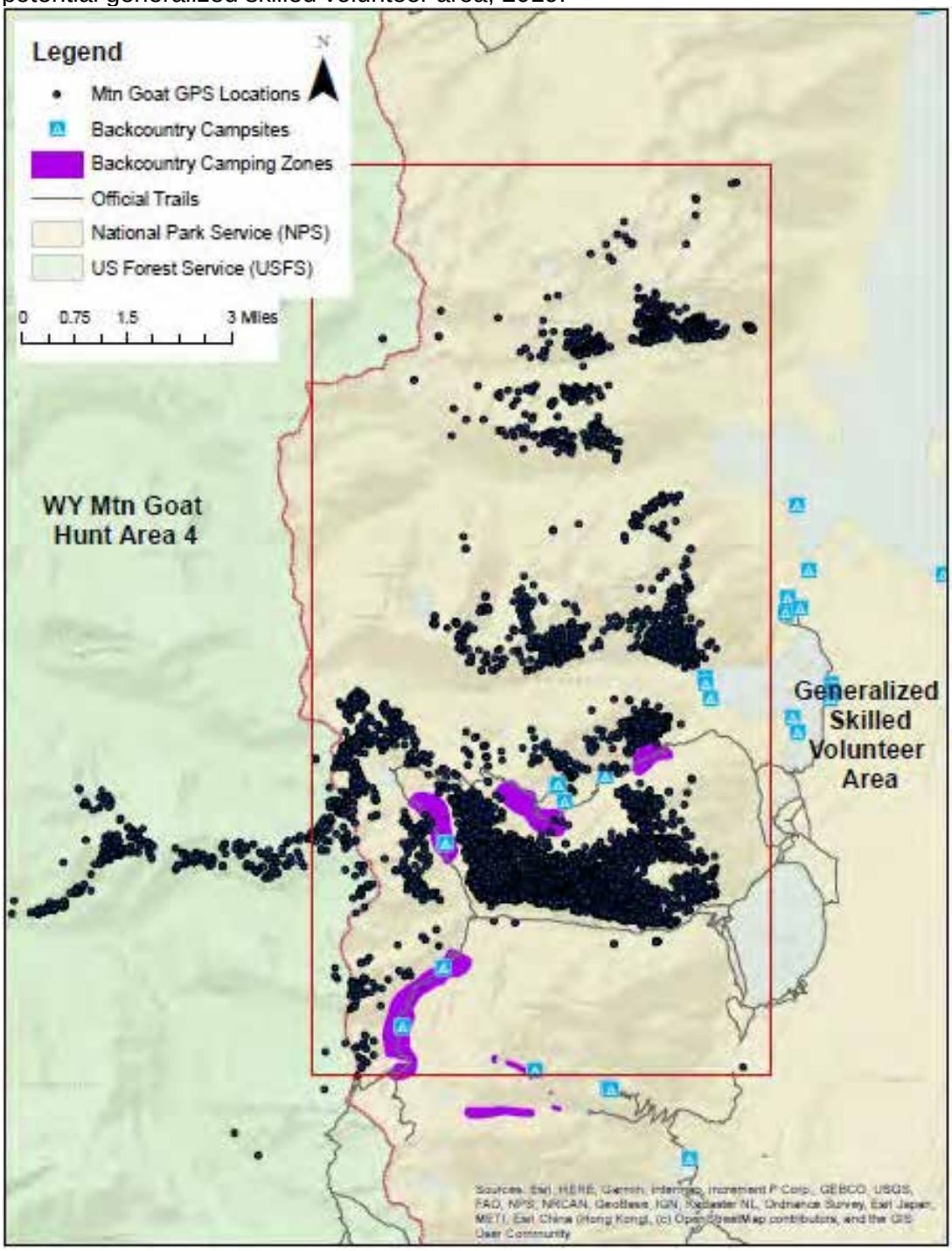


Figure 1a (b) (5)

Figure 1b. The distribution of goat GPS relocations, backcountry campsites, and trails in the potential generalized skilled volunteer area, 2019.



VIP Culling docs.pdf

From:	Happe, Patricia
To:	David Gustine; Dewey, Sarah
Subject:	VIP Culling docs
Date:	Tuesday, November 12, 2019 1:43:17 PM
Attachments:	VIP Culling document.pjhcomments_RBH_thoughts1107119.docx VIP Culling document.docx BRD Responses to Jean.docx

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Thanks Dave and Sarah for the call this morning - it was a big help, and I look forward to us working together on this.
Attached is the document I mentioned that I got from Jenny. I am sending a clean version, their responses to questions raised by someone else, and a version Rich Harris and I marked-up.

--
Patti

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VIP Culling document.pjhcomments_RBH_thoughts.pdf

January, 2018

On the Use of Public Volunteers to Cull Wildlife in the National Park System

The purpose of this document is to assist and support National Park Service (NPS, Service) managers who are considering implementation of wildlife culling operations where public volunteers will participate in associated stewardship actions. This guide is not meant to prescribe the activities for any specific NPS unit. Instead, it describes the breadth and depth of issues which should be considered and decided upon at the local level. There is no one public volunteer culling model that will fit perfectly for every park. There are, however, lessons learned which may be helpful to other units in the system. Consulting with other NPS managers who have been through this process is strongly encouraged as is partnering with state wildlife management agencies and neighboring land management agencies whenever practical and appropriate.

Background

The NPS is unique among federal land management agencies in its mandate regarding hunting. Unlike the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS), NPS lands are closed to hunting, except where it is specifically authorized by Congress. There are approximately 76 (of 417) NPS units open to hunting, most of which are named as National Preserves, National Seashores, or National Recreation Areas. None of the units named as National Parks have public hunting (though one, Grand Teton National Park, has a statutorily mandated elk reduction program that temporarily deputizes state licensed hunters for elk reduction but is not technically considered a "hunting park").

This long standing legal requirement of prohibiting public hunting in national park units has resulted in the NPS managing overabundant wildlife in a variety of alternate methods through the last century. It is important to acknowledge that in the first 30 years after establishment of the Service in 1916, many wildlife populations, particularly ungulates, were at historically low levels as a result of market hunting, habitat degradation, and unregulated sport hunting in the late 19th and early 20th centuries. As populations of ungulates began to recover in the mid-20th century, the NPS and other land managers recognized that increasing populations were having significant negative impacts on vegetation and other natural and cultural resources. The NPS began to cull mule deer and elk using NPS and state wildlife agency personnel in some western parks as early as the 1930s, and this practice continued through the 1960s. In 1963, an NPS advisory board chaired by A. Starker Leopold released a report that stated that "A national park should represent a vignette of primitive America" (Leopold p.3) and "Above all other policies, the maintenance of naturalness should prevail." (Leopold p.6) These ideas were both formally and informally adopted by the NPS and governed the management of ungulates for almost 30 years. The concepts of allowing nature to run its course and minimizing active population management were applied throughout the Service. But the Leopold Report also contained the following recommendation: "as removal programs (for wildlife) increase in size and scope, the NPS may find it advantageous to employ or otherwise engage additional shooters from the general public" (Leopold p.14). This advice was not followed during the 40 year period from the mid-1960s to the mid-2000s.

By the late 1980s and early 1990s, NPS managers at many parks were aware of significant issues with increasing populations of white-tailed deer in the East and elk in the West. There were significant documented impacts on ecosystems and park resources, risks to public health and safety, and frustration among neighboring land owners. Managers grew concerned about continuing this "hands off" policy of wildlife population management. In the mid-1990s NPS again initiated culling by agency personnel or hired contractors, such as the USDA/Animal and Plant Health Inspection Service/Wildlife Services.

Other alternatives for reducing effects of ungulates and protecting park resources were often considered during planning efforts and in a few specific cases were implemented. These options include translocation, predator restoration, wildlife fertility control, and fencing to protect vulnerable plant species. At the present time, only fencing is used on a regular basis. Until recently, there has been little

direct public involvement in wildlife management actions on NPS lands other than through the public planning process. However, in the past 10-15 years, there has been increasing public and state wildlife agency support for direct public involvement in removal of excess wildlife from NPS lands. In 2009, Rocky Mountain National Park, and in 2010, Theodore Roosevelt National Park, began using public volunteers to assist with elk culling and in 2016 the NPS compared and contrasted these two programs. For additional information on these projects see Natural Resource Report NPS/NRSS/BRD -2016/1119.

The Service found that implementing public volunteer programs to cull wildlife generated significant support from some constituencies such as state wildlife agencies, rural communities, and sportsmen; however, these types of programs also generated negative responses from anti-hunting groups and some traditional NPS visitor support groups. The fiscal costs are highly variable and depend on the specific logistics of each program. At Theodore Roosevelt NP, the cost per animal was less when the public was engaged than when agency culling was used alone. At Rocky Mountain NP, all animals were taken by volunteers and therefore it was difficult to compare costs of agency only versus volunteer culling. The recommendations to other parks considering this option include: thorough public outreach efforts, site specific analysis of biological and social issues, and a cost benefit analysis by NPS leadership including the political gains and liabilities.

The use of public volunteers is primarily relevant to NPS units where public hunting is not authorized by law. In NPS units open to hunting, it is generally less expensive, more efficient, and more politically acceptable to use public hunting seasons following consult with the relevant State, and with or without state coordination on implementation, in order to achieve the necessary removals to achieve resource management goals. However, there may be certain situations where the NPS might choose to use public volunteers in a hunting-authorized unit; this could include situations where there is no public hunting season available for a specific species, or recreational harvest is not effective due to lack of interest, timing, coordination or other regulatory or social reasons.

Laws

There are multiple federal statutes, regulations and NPS policies relevant to the use of public volunteers in National Parks as a means of reducing wildlife populations.

54 U.S.C. § 100101(a), also known as the "NPS Organic Act," gives the Service the authority to "promote and regulate the use of the National Park System by means and measures that conform to the fundamental purpose" of its units, "which purpose is to conserve the . . . wild life and provide for the enjoyment . . . in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations". This is a clear mandate from Congress that the NPS has authority over wildlife on its lands, except as otherwise specifically provided by federal statute. This is an important distinction between NPS and other federal land management agencies, such as the Bureau of Land Management (BLM) and the US Forest Service (USFS) where authorities for wildlife management are not as clear and where certain actions, such as management of many wildlife populations have been relinquished to state wildlife agencies.

In addition, 54 U.S.C. § 100752 allows NPS to "provide for the destruction of such animals and plant life as may be detrimental to the use of any System unit". This law allows the NPS to develop and implement programs to destroy native or non-native animals that it deems to be detrimental to the fundamental needs of a specific unit. Historically this has been used to support reduction or elimination of non-native and invasive species, but it also supports reduction of native species, and in particular ungulates like mule deer, white-tailed deer, and elk in situations where they have exceeded ecological or social carrying capacity and have negative impacts on park resources.

Finally, 54 U.S.C. § 102301 gives the NPS the authority to "recruit, train and accept the services of individuals without compensation as volunteer for or in aid of other activities in and related to System units and related areas". Historically these volunteers have focused on interpretive and visitor functions; however, their use in other activities, such as wildlife management, has also occurred. These three federal statutes form the legal basis and authority for the NPS to manage wildlife and also to engage the public as volunteers to assist in situations where populations need to be reduced for ecological, social, and other reasons.

Regulations

NPS regulations at 36 CFR § 1.4 contain definitions of wildlife and hunting that are relevant to wildlife management, and 36 CFR § 2.2 contains NPS's prohibition on hunting except in units with specific statutory authorization for it, as well as additional provisions applicable to hunting. However, these regulations apply primarily to visitor activities, and not to NPS management actions. Wildlife reduction falls under the regulatory exemption for administrative activities carried out by NPS, 36 C.F.R. § 1.2(c), and as a result it is not directly subject to these regulations. Finally, 43 CFR §24.4 addresses resource management on Department of the Interior lands. Paragraph (5) requires consultation with states on a number of actions including "the planned and orderly removal of surplus or harmful populations of fish and wildlife". However, there is an exception that says consultation is NOT required "when the Secretary determines that such compliance would prevent him [or her] from carrying out statutory duties". Consultation can be accomplished through formal National Environmental Policy Act (NEPA) planning processes or through informal meetings and dialog.

Policies

There are no specific policies in Management Policies 2006 that directly deal with the use of public volunteers for wildlife culling. However, Section 7.6.1 discusses a variety of activities in the Volunteers in Park (VIP) program yet only mentions wildlife culling in the context of interpretation and education. Section 4.4.2.1 *NPS Actions that Remove Native Plants and Animals* is applicable as it supports removal of native animals only when it can be done without unacceptable risks to native resources, natural processes, or other park resources. This section also specifically allows for the removal of native wildlife "by NPS personnel or their authorized agents." It further states that when such removals occur the "destroyed animals may be left in natural areas" and allowed to decompose unless there are circumstances where carcasses should be removed for human health, safety and other reasons. This policy further states that live animals or carcasses may be removed from parks according to applicable laws, regulations or agreements, including preferences for Native Americans.

Differences Between Culling and Hunting

As discussed above, the destruction of detrimental animals as part of NPS wildlife management activities, or culling, is governed by different authorities than public hunting of wildlife by park visitors. It is important for NPS managers to be aware of the distinctions between the two and to consistently manage and refer to them as distinct activities.

NPS received some guidance on these distinctions in a 2011 decision by the U.S. District Court for the District of Colorado that rejected a challenge to the elk management plan at Rocky Mountain National Park (*WildEarth Guardians v. National Park Service*, 804 F. Supp. 2d 1150 [2011]). The plaintiffs in that case argued in part that NPS's use of public volunteers to cull elk violated the legal prohibition of hunting in the park. In rejecting that argument and upholding the NPS plan, the court discussed several key ways that the elk culling differed from hunting, namely: the **purpose** for destroying the animal, the **manner** in which the destruction occurred, and the **disposition** of the animals that were killed. First, culling is done exclusively for conservation and stewardship purposes, while hunting is done primarily for recreation or

procuring food. Second, culling is conducted under controlled circumstances under the supervision of NPS personnel, while hunting is performed at the hunter's discretion (subject to applicable licensing and laws) and with elements of "fair chase". Finally, hunting allows and most often requires the person taking the animal to keep the meat, while culling does not. The court's opinion finished with the following: "put simply, culling serves the public purpose, while hunting serves both public and private purposes".

The U.S. Court of Appeals for the Tenth Circuit later affirmed this decision in an opinion that for most purposes is more legally authoritative, 703 F.3d 1178 (10th Cir. 2013), but because it did not discuss the distinction between culling and hunting in the same detail, the District Court opinion remains a useful source of guidance on that point. It is not entirely binding on NPS actions—culling programs do not necessarily need to mimic the Rocky Mountain National Park elk plan in every detail—but culling that follows the principles discussed can be seen as more likely to withstand any potential legal challenges.

Maintaining these distinctions between recreational hunting and culling is thus a critical aspect of instituting a public volunteer reduction program. There are other aspects of these distinctions that NPS managers should be aware of.

Licensing: All recreational hunting in the U.S. requires a state issued hunting license (the only exceptions may be damage control on private lands for certain species [some of which are not classified by states as wildlife]). There is no requirement that public volunteers on NPS lands not open to hunting have a state issued hunting license. In fact, culling appears less like hunting if no license requirement is mandated by the NPS. Some states that are partnering in these programs may desire the NPS to make this a requirement, but it may not be prudent as it can blur the distinction between hunting and culling. In addition, most states require a hunter education certificate (issued by states after taking a course) before a hunter can purchase a license. Parks might consider this option as one of the multiple requirements for prospective public volunteers. It gives the NPS knowledge that the person applying has had some firearms and safety training. However, requiring a hunter education certificate does not mandate requiring a state hunting license for culling purposes. The most important aspect of this concept is that volunteers have the skills necessary to perform the culling operations. These skills can be evaluated in a variety of ways (see *Volunteer Selection* section below).

Commented [HPJ1]: So will not require license, but will require documentation of taking hunter education course. RBH Makes sense to me.

State Regulations: Most hunting occurs in the U.S. under a series of laws and regulations that dictate criteria that hunters must follow. These include limits on the species and number of animals that may be killed, seasons for specific species, types of weapons and ammunition allowed, safety clothing, and fair-chase rules, among others. It may be important for the NPS **not** to fully follow the state regulations for the species that the NPS is culling. For example, NPS may not follow state limits on the number of animals that can legally be removed, whether as a daily or season restrictions, if they interfere with NPS's management goals or decrease the efficiency of culling efforts. In many situations there are opportunities for one shooter to kill multiple animals and achieve culling goals more quickly and efficiently than if the NPS were to follow applicable state rules. State wildlife agency rules or laws that regulate safe hunting activities, such as blaze orange, shooting from or across public roads, and carrying loaded weapons in vehicles should be considered by parks as potential safety measures that could be adopted for culling programs. The NPS must be considerate of stewardship goals and objectives when designing their project implementation plan.

Commented [HPJ2]: We will not follow these limits, instead will require that they shoot all they encounter, with preference for adult females, followed by yearlings. RBH: Agree.

Commented [HPJ3]: I think should require blaze orange – or some other distinguishing garment so the public will also know what is up. RBH: Absolutely, and maybe also some sort of "NPS volunteer" gear….identifying them as legally doing this…

Fair-Chase: Fair-chase is a philosophy that governs and limits the use of certain tools that would make hunting easier and give hunters a distinct advantage. Laws and regulations regarding fair-chase are not consistent between states. Techniques that fall outside of fair-chase may include the use of aircraft, vehicles and lights to kill wildlife, hunting over bait, hunting in situations where wildlife is artificially constrained by fences, and the use of electronic devices to attract targeted wildlife to certain areas. However, many of these tools and techniques might be valuable to aid the NPS and public volunteers in the efficient reduction of targeted species. Under a culling program the principles of fair-chase are not

applicable, and may run counter to the overall goals of the program. Two techniques that parks have used are the use of bait to attract animals to areas that are safe and convenient for culling, and the use of radio-collars to identify animal locations for more efficient culling operations.

Commented [HPJ4]: Fair chase rules will not necessarily be in effect, but we also will not be doing much to improve hunters success. RBH: Well, but you will be directing VIPs to where you suspect goats are, right? So in a sense, you are helping them….

Table 1: *Park attributes*

	ROMO	THRO	WICA	HAVO	EVER
Species	Elk	Elk	Elk	Non-native Mouflon sheep	Non-native reptiles
National vs state volunteer selection	National	National	State	National but mostly local	National but mostly local
State hunting education course required?	No	No	Yes	Yes	No
Hunting license required?	No	No	No	Yes	No
Meat distribution through the state?	Yes	Partially	Yes	No	N/A
Shooting test required?	Yes	Yes	Yes	No	N/A
VIP agreement required?	Yes	Yes	Yes	Yes	Yes
Criminal background check required?	Yes	Yes	Yes	No	Yes
Volunteer period	At least one season	5 days	5 days	1 day	At least 5 days in a 6 month period
Volunteer uses NPS firearm?	Yes	No	No	No	N/A
NPS or public supplied non-lead ammunition?	NPS	Public	Public	NPS and public	N/A
Meat distribution	Public lottery	Volunteers (through ND), tribes, charities (directly)	Volunteers (directly), charities and tribes (through SD)	Volunteer meat recovery person directly	N/A
Carcass storage	Commercial meat locker	Refrigerated truck on site	Refrigerated truck on site	N/A	N/A

Commented [HPJ5]: See what recruitment process they used RBH: There could be some considerable administrative burden in putting this together. I think it worth asking WDFW licensing if they have an automated system that might be 'borrowed' (or lightly revised) for this purposes.

Commented [HPJ6]: Check other parks formats

Commented [HPJ7]: Check which format other parks used

Commented [HPJ8]: Need to work with state on this

Commented [HPJ9]: See if we can work something out with sunrise meat.

Use of Volunteers in Parks to Cull Wildlife

There are five park units that currently or in the recent past have used public volunteers to remove wildlife (see Table 1). At Theodore Roosevelt National Park (THRO), Rocky Mountain National Park (ROMO), and Wind Cave National Park (WICA) three unique programs were used to kill elk. All three used members of the public to shoot elk and assist with dressing, cleaning, and storing the meat. Each program was different in the method of volunteer selection, the amount of training and supervision, the efficiency of removal, and the cost; however, they all worked closely with their respective state wildlife agencies to distribute the meat derived from these programs. At Hawaii Volcanoes National Park (HAVO) members of the public are brought into units where non-native Mouflon sheep removal is occurring. Two volunteers are given the opportunity to shoot and a third person can retain the meat from as many animals as the team can remove per day. A state hunting license is required at HAVO but not at the other parks where volunteers are removing wildlife. At Everglades National Park (EVER) members of the public can sign up as agents of the park to live capture Burmese Pythons and other non-native reptiles

and amphibians. Injurious wildlife is then placed in bags and collection bins within the park and park staff is responsible for analysis and disposition of the animals. A current Volunteer in Parks agreement is required in each of these parks to complete this work. Costs and staff time vary widely between parks and depend on how intensively the program is managed. To date, all programs where firearms are used have at least one NPS employee with the volunteers at all times.

Where might public volunteer culling be effective?

Engaging public volunteers to remove wildlife may be a useful tool in other NPS units. At the present time there are four parks that have ongoing formal NEPA planning processes that include an alternative to use public volunteers; these include Grand Canyon National Park (bison), Olympic National Park (mountain goats), and Great Sand Dunes National Park and Preserve (elk), Chesapeake and Ohio Canal, and Harpers Ferry National Historical Park (white-tailed deer). There are common biological, socio-political, and logistical attributes of parks that lend themselves to engaging public volunteers.

Biological environment

There should be documented adequate demonstration of the problem and impacts caused by overabundant wildlife species. Documenting effects of overabundant wildlife can take years of data collection and analysis and may require specific biological expertise. Some NPS units may not have this expertise on site and partnering with outside researchers (e.g., U.S. Geological Survey staff), the NPS Inventory and Monitoring Division, universities and contractors, is encouraged in order to assist with this biological evaluation. Or, as in EVER, the purpose of the volunteer program itself may be to acquire individual animals to aid in understanding the problem and developing an appropriate management strategy. These analyses may include habitat and vegetation assessments, loss of or damage to key indicator species, or potential impacts on species of special concern (e.g., threatened and endangered species and their habitats, local species of concern), or detection or removal probabilities of the target species itself. There should also be sufficient ecological and demographic information about the target population to make informed choices on how many animals, and of which sex and age class to remove to meet and sustain population management objectives. Finally, it is important to understand animal accessibility. Knowing wildlife distribution and abundance, what migration or movement patterns are, and when and to what extent they use NPS lands and their impacts, are critical.

Social environment

The use of public volunteers has many internal and external social issues that park managers should consider. This is a relatively new tool and NPS employees may not be comfortable or familiar with members of the public using firearms in parks or with the public being involved in activities that have traditionally been performed by NPS employees or other professionals. Despite these concerns, several National Parks, with internal as well as external support, have successfully implemented public volunteer culling programs.

Local, regional, and national stakeholders often have strong feelings about the benefits and detriments of using public volunteers to cull wildlife. Nationally, there are many pro-hunting and wildlife conservation organizations that support the use of public volunteers as a tool for wildlife management in the National Park System. Many of these groups have robust political support and have used their influence in various public processes to seek greater use of public volunteers. Conversely, there are a number of animal welfare, environmental conservation, and national park support groups that have expressed strong opposition to the use of public volunteers for culling activities as it closely resembles recreational hunting. As discussed above, NPS was sued by one such group over the Rocky Mountain National Park elk management plan, in part over the use of public volunteers. Parks considering the use of public volunteers should reach out to both sides of this issue and have an active program for stakeholder

engagement at the national and local levels; this is both to inform and prevent either side from diverting planning processes and decisions with political intervention.

At the local level, support for or opposition to public volunteers depends on a variety of factors; key among them are local government, local land-owners, and other constituents. All of these stakeholders should be well informed of decision making processes and be invited into the conversation. Urban and ex-urban constituents tend to focus concerns on safety issues, effects on visitation and local economies, as well as placing more emphasis on animal welfare issues. In contrast, rural constituents often have concerns about impacts to private property and agricultural interests. Additionally, they tend to focus on impacts on local hunting opportunities. This was the situation at Theodore Roosevelt NP in North Dakota where there was great public interest in elk culling opportunities that was compounded by few opportunities for elk hunting in the state. If there are ample hunting opportunities locally there may be less support from hunters and state wildlife agencies for using public volunteers. This was the scenario at Rocky Mountain NP where there is a great deal of public hunting available for elk in the state and thus less interest to participate in controlled culling activities. Likely the best source of information regarding local hunting communities will be state wildlife agencies. They work with and know this constituency well and can provide key information to parks regarding the potential interest from the state hunting community. In addition to local hunting interests parks should be aware of the concerns of local landowners, be they private, county, state or federal and ensure that their opinions are taken into consideration prior to making decisions.

In addition to understanding national and local publics, it is important to understand the how culling operations are perceived in light of societal ethics. For example, considering whether females have dependent young at the proposed culling time (e.g., April-August for most ungulates) is important. If it is necessary to remove females during this time consideration should be given to removing their offspring as well. Similarly, due to animal welfare concerns significant effort should be made to minimize wounding losses. Finally, culling of male animals, such as buck deer or bull elk is often necessary to achieve population goals and to mitigate habitat issues. If so, then a good solution is to wait until antler drop, if possible. This reduces the perception that trained volunteers are targeting trophy males and thus reducing desirable public hunting opportunities outside of NPS boundaries.

Logistical constraints

Funding

On-the-ground logistics and personnel experience often dictate the nature of the volunteer program. Recent volunteer programs have been resource intensive, both in terms of costs and employee time. Specific costs for implementation of two elk culling programs has been analyzed and can be found in Natural Resource Report NPS/NRSS/BRD -2016/1119. Future programs may be more efficient and less expensive depending on the intensity of the culling effort and the level of oversight individual parks find necessary. Pursuing funding for implementation at the same time as finishing planning compliance will make removal operations more expedient.

Timing

The timing of trained volunteer actions depends on many variables. Removal periods should be prioritized based on efficiency of removals and optimizing safety for staff and volunteers while minimizing impacts to other park visitors. One important factor is deciding whether or not removal efforts will be in conjunction with hunting seasons outside the park. In some situations efforts are coincident so as not to create a refuge situation either inside or outside of the park and therefore maximize efficiency. Alternately, it may be necessary to cull animals during the summer months when volunteers can most effectively access backcountry habitat but most public hunting is not available. Similarly, it is important

to consider if it is possible to differentiate males and females easily at the time of year considered for removal operations. Generally, it is desirable to focus on removal of females if the goal is population reduction or stabilization. Additionally, it is often perceived more favorably by stakeholders if females rather than males are removed, particularly in situations where there is public hunting focused on male harvest adjacent to NPS properties. However, there are instances where it may be more important to remove males, such as when there is disease that carried or shed more often by one sex.

Time of day

Most wildlife species are more active in early morning and late evening and thus these can be productive times to focus culling efforts. These are also periods that may not correspond to peak visitor use. Depending on local conditions, night culling over bait and with lights or night vision optics can be very effective and this time may avoid visitor conflicts. However, night removal raises safety issues and needs to be carefully coordinated. By using stands or specific shooting areas and not allowing volunteers to randomly move around after dark, safety concerns can be mitigated. During all of the public volunteer removal operations conducted to date volunteers operated during daylight hours.

Location

Depending on the species and park terrain, culling locations will vary significantly. Site selection criteria should include areas where animals are readily available and at a density that allows for adequate efficiency. When the target species is white-tailed deer, an animal with a relatively small home range, culling can usually be done in any portion of the home range and should be targeted to areas that are distant from high visitor use. Use of tree stands and bait can significantly increase culling success. Conversely, elk and other large ungulates are often migratory and may not stay in a park year-round; thus culling should occur when animals are available and concentrated in the park. Given the direction already noted to avoid times with dependent young, this may constrain available locations.

Culling is more efficient if there is relatively easy access for trained volunteers to access the targeted species. Use of radio-telemetered sentinel animals (i.e., Judas animal) can increase efficiency when locating groups of herd based animals. Requiring lengthy walking to access culling areas and remove carcasses can reduce efficiency, though may be necessary (wilderness areas). Theodore Roosevelt NP packed quartered animals out of the backcountry in backpacks and via pack horses whereas Wind Cave NP used ATV/UTVs to remove entire intact carcasses. Rocky Mountain NP gutted the animals at the kill site and sledded carcasses short distances to the road by hand. Hawaii Volcanoes NP had moderate hikes to access Mouflon carcasses that were brought out in backpacks. In addition to the level of difficulty in accessing animals and carcasses, wilderness regulations add to the complexity and analysis. Without access to motorized vehicles, efficiency will be decreased in most situations.

Parks should also consider impacts to other visitors. Closing areas to public use during culling operations may be warranted. Theodore Roosevelt NP and Wind Cave NP closed the backcountry to visitor use during the culling operations whereas Rocky Mountain NP did not close areas but conducted low intensity operations at times when visitors were not typically present. At Hawaii Volcanoes NP, in units where culling occurs limited visitation is allowed but only during non-culling times. Potential visitor closures are often controversial and should be considered during the planning processes.

Commented [HPJ10]: So we will operate after labor day when use is lower, and have low density shooting.

Volunteers

Selection

Selection of public volunteers who have the skills and attitude necessary for a successful culling operation is critical. First, the pool of potential volunteers from which to select must be identified. The NPS is a national organization and as such, one potential pool is all interested U.S. citizens. Depending on method

and intensity of advertising, this may create a large pool of potential applicants and may be difficult to manage. Theodore Roosevelt and Rocky Mountain NPs advertised nationally, through websites and other media outlets and Theodore Roosevelt NP in particular drew intense national interest, which added to the overall cost of managing the program. In contrast, Wind Cave NP, in cooperation with South Dakota Game Fish and Parks (SDGFP), used only the SDGFP hunter data base as the potential applicant pool. Because South Dakota restricts elk hunting to only residents this restricted the pool to in-state hunters. This decreased the cost of volunteer selection. Early on at Hawaii Volcanoes NP, there was national advertisement and interest in of the program. However, after the initial 8 years, the park took a break to implement a planning process and since then has focused on local advertisement and meeting the interest of local communities although the program remains open to any U.S. citizen who meets the requirements. Similarly, Everglades NP has focused on local residents with knowledge of constrictor snakes and maximizing effective participation over time. They used word-of-mouth and the park website to build a network of volunteers who are willing to return multiple times but the program remains open to anyone who meets the requirements.

Commented [HPJ11]: Get their outreach materials.

Commented [HPJ12]: Seems like the sweet spot.

In some situations, an efficient system may be to use a state data base of hunters who have an expressed interest in the targeted species; however, this then requires that a person be a state licensed hunter in order to be considered and may not be perceived as a fair process by non-hunters or people from other states. Conversely, an NPS derived selection process that extends beyond state boundaries may be more defensible given that the National Park System is managed for all members of the public. There are no known legal constraints regarding local, state, or national selection processes, nor have there been any specific challenges to date in existing NPS public volunteer culling programs.

Beyond geographic location of potential volunteers, a method of evaluating and selecting volunteers based on their skill sets and attitudes towards culling, hunting, and conservation is a critical need. This may include a shooting proficiency test, self-certifications of fitness and/or skill in meat processing, oral/written interviews by NPS staff to determine experience of the volunteer, demonstration of these skills prior to allowing a volunteer to participate, and/or on the job training. A method of confirming a volunteer's eligibility to possess a firearm under the Gun Control Act (1968) and Lautenberg Amendment (2001) is required (e.g., criminal background check, Lautenberg certification). Different methods have been used at each park. The most intense screening process was at Rocky Mountain NP, which required an extensive written application, criminal background check, in-person interviews including their personal views of conservation and hunting, and a shooting test. Additionally, they required two days of classroom training and one day in the field as a dry run. Conversely, at Theodore Roosevelt NP there were no in-person interviews. Self-certification of physical capabilities and an on-site shooting test were the only requirements in addition to a half-day classroom orientation. Despite these self-certifications there was significant drop-out due to physical limitations and failure of the shooting test (~20-25%). More intensive screening processes and training add to program costs. The amount of training and screening needed may be a function of the complexity of the program and the level of controversy that culling has generated among stakeholders, as well as site-specific safety issues. This will need to be decided on a park by park basis.

Commented [HPJ13]: use

Supervision

Clearly, evaluation and encouragement of skills related to knowledge and use of firearms, killing and dressing large animals, and working in a team environment takes tact and experience on the part of NPS employees functioning as volunteer supervisors. Employees who are supervising volunteers using firearms to cull wildlife must have high skill levels in these fields themselves which often means they may have traditional hunting backgrounds or have participated in wildlife culling in the past. Additionally, they must have high levels of maturity, excellent interpersonal skills, and enthusiasm for leading people by demonstrating a good example. Supervisors must also know what to do in the event of a medical emergency; therefore basic or backcountry first aid and CPR are important skills. Finally, an

excellent working relationship between direct supervisors and other NPS staff, particularly law enforcement and interpretation, may facilitate positive outcomes if there is a human-related emergency in the backcountry. Given the diverse nature of these operations, NPS staff with both biological and visitor safety backgrounds are needed to coordinate a successful program.

Supervision of volunteers can be intensive or extensive. For example, at Rocky Mountain NP, the Incident Command System was employed during public volunteer operations; whereas at Everglades NP volunteers work unsupervised by NPS employees. To date, when firearms are used at least one NPS employee has directly supervised 1-4 volunteers. Depending on the difficulty of finding animals, the terrain that is covered, fitness of the volunteers, difficulty in removing meat safely from the field, and circumstances surrounding visitor safety, different parks may require more or less supervision. In most parks volunteers also help with data collection and dressing and processing meat. It is important for supervisors to emphasize the importance of accurate data gathering and hygienic meat processing techniques as many volunteers may not have experience in these areas.

Those public volunteers who have a positive relationship with their VIP supervisors and view their culling experience as beneficial often become long term advocates and ambassadors of the Park and the NPS (Natural Resource Report NPS/NRSS/BRD -2016/1119). Volunteers with the time and means to engage in these types of programs are most often members of the local or at least regional communities. They often return to the park and engage in other volunteer opportunities such as vegetation monitoring, data collection, or wildlife surveys. To date, the overwhelming majority of volunteer experiences have been positive and they are eager to share their experiences with others in their communities. They bring legitimacy to the culling programs by telling their communities the reality and dispelling the myths of the culling programs. They often speak with the press or on social media sites and can tell their stories publically, again validating the NPS programs and their wildlife management and stewardship goals. The positive nature of their stories is most often directly related to their experience in the culling program. When the supervisor made them feel useful, engaged, and a valued member of the team, their stories often reflect this. The unique nature of the experience also adds to the affirmative feedback that volunteers give. Therefore, selecting the appropriate supervisors is of utmost importance.

Method of take

There are a variety of weapon types available to cull wildlife. This decision should be based on a number of factors including: the targeted species, safety, noise issues, and efficacy of the weapon. Tolerance for wounding issues and local social norms surrounding firearms will also influence this decision.

Only non-lead ammunition should be used in culling operations per Director's Memo dated March 4, 2009. This policy is to protect human and wildlife health, reduce impacts on the environment and minimize spent lead in soil entering the food chain via scavenging. While non-lead ammunition may be more difficult to find and more expensive to purchase than traditional lead bullets, it is an NPS requirement in culling activities. Volunteers may not be familiar with using non-lead ammunition. Parks can offer to provide non-lead ammunition to volunteers to use in personally owned weapons, or they can provide standardized weapon and ammunition combinations to volunteers. Alternately, parks can require volunteers to bring their own weapon and ammunition of appropriate caliber. Requiring the use of NPS firearms provides a level of consistency but may be a burden to participants as most volunteers already own and are most comfortable with their own weapons. There is a significant cost to parks if they decide to purchase and maintain weapons for culling and this may not be necessary to ensure program success (see Table 1).

Commented [HPJ14]: I don't know if we have that here. Will need to recruit someone.

Commented [HPJ15]: We will not directly supervise them; no NPS staff will be in the field with the volunteers.

Commented [HPJ16]: Will be a requirement of volunteers, and part of training.

Rifles

High powered, scoped, center fire rifles are generally the most efficient tool for culling large ungulates. They have a greater range, greater killing power, and widespread availability that make them a logical choice. The high accuracy and killing power make them more efficient and effective than other weapons and there is less wounding loss. However, bullets can travel long distances, more than a mile in certain situations, therefore it is important to know the backdrop and final disposition of the bullet if the target is missed. In urbanized or high use areas this can create safety concerns. Restricting the use of rifles to certain areas or requiring volunteers to be located in stands or against safe backdrops can dramatically reduce risk, but it also limits efficiency. Rim fire rifles (.22 caliber) are generally not a viable tool for culling ungulates. They do not have enough power to efficiently kill larger animals (white-tailed deer and larger) and can still travel distances up to one mile; therefore, their use is not recommended. Appropriate caliber and grain of ammunition is species and environment dependent. State wildlife agencies often have requirements for caliber and grain for a given species that may be adopted by parks. Other sources of information on ammunition size are available from NPS law enforcement personnel and from other parks that have engaged in culling, either internally or with the public. Semi-automatic high powered rifles are legal to use in many states; however the number of bullets allowed in magazines varies by state. For safety reasons, it is recommended that parks consider adopting rules consistent with state law that restrict the total number of bullets available in both the magazine and chamber.

Shotguns

Shotguns shooting either a slug or large shot (00 buck shot for example) are highly effective in killing larger animals, in particular white-tailed deer, but are limited by their effective range. In general, shotguns are effective up to 75-100 yards. In certain situations like forested environments they can be an effective tool for culling. They may be particularly useful in situations where houses, campgrounds, or other human activity occur in the general area. Shotgun slugs will generally not travel more than 300 yards. There are numerous situations where shotguns have been used by hunters to effectively reduce white-tailed deer in urban and ex-urban locations. They are most effective when used in conjunction with tree-stands and over baited areas. In nearly all situations 12 gauge shotguns should be used, as smaller gauges such as 16, 20 or 28 are not typically effective for large mammals. Non-lead shotgun slugs and buck shot is generally widely available.

Muzzleloading rifles

These weapons have similar capabilities to 12 gauge shotguns but are much less efficient as they shoot only one round and then have to be reloaded. Given this reduced efficiency they should not be considered for culling.

Archery

Archery equipment has evolved in recent years and has become more efficient with the use of compound bows. Archery is effective up to 50-70 yards and arrows tend to travel less than 150 yards in most situations. Given these parameters archery could be utilized by public volunteers in specific situations where animals are found in close proximity to developed areas. Generally, archery is most efficient when combined with the use of blinds or tree stands and efficiency is maximized for culling if done over bait. Another potential benefit of archery is the lack of sound impacts as compared to firearms. One significant drawback of archery is that wounding loss is increased and wounded animals may leave the park and not be recovered. Additionally, archery is less efficient than other methods given the time it takes to shoot multiple arrows and may not be appropriate for large body size animals such as bison. The park must considered volunteer skills and animal welfare aspects in this type of weapon use.

Carcass disposition

While retention of meat is not required by law or NPS policy, it is consistently an important ethical consideration when deciding on the disposition of the culled animal. State wildlife agencies, the general public, and NPS staff generally agree that using the meat for human consumption is a positive outcome from a culling operation (Natural Resource Report NPS/NRSS/BRD -2016/1119). NPS's authority to "provide for the destruction" of detrimental animals also allows for disposition of the remains of these animals, whether it is via meat donation to state wildlife agencies, charities, tribes, or individuals or to dispose of the carcasses in other ways such as decomposition on the landscape or left for scavenging or through the use of landfill, incineration, or alkaline digestion. All options are available for disposition of carcasses. Parks should be aware of the cultural and political sensitivities of methods which appear to waste edible meat or otherwise discard what may be culturally valuable portions of the carcass. While there is no legal prohibition against allowing a volunteer to keep an animal the VIP culls or its meat, it is important to note that this weakens one of the distinctions between volunteer culling and hunting (as discussed above).

In general, there is strong support for salvaging valuable portions of the carcass and making them available to tribes, charitable organizations, or volunteers. State wildlife agencies often want the volunteers to be able to retain the meat. To date, parks have generally worked closely with states for meat distribution. At Rocky Mountain NP, the carcass became the property of the state once it was loaded into a truck for transport to a meat locker. At Theodore Roosevelt NP some meat was donated to the state and this was in turn donated to the volunteers and the remainder of the meat was directly donated to tribes or food banks. At Wind Cave NP, all meat was donated to the state and the state donated the meat of one elk to each volunteer with the rest going to charities. At Hawaii Volcanoes NP, meat is salvaged by a third volunteer who is not part of the culling operation and the meat is directly retained by this person. At Everglades NP, once the animal was dispatched by NPS personnel, a full necropsy was performed, data collected, and the carcass returned to the environment to decompose. Disease and toxins must be considered when planning for disposition.

Non-edible portions of animals such as antlers, horns, and hides are often desired by public volunteers and by tribal interests for ceremonial reasons. The retention and donation of these products can be controversial and also make for a less efficient cull. Removing these from the field takes additional time and effort and can reduce time spent in actual culling. However, in some situations, parks may find it advantageous to allow some of these parts to be removed and donated to specific groups or to volunteers depending on local situations. Generally, photographing volunteers in "trophy poses" is discouraged.

Public health

Once a decision has been made to donate all or portions of carcasses it is important to maintain good meat handling protocols to prevent contamination or spoilage. The U.S. Public Health Service (USPHS) has Public Health Consultants stationed within parks throughout the nation as well as a Public Health Veterinarian stationed within the Biological Resources Division of the Natural Resource Stewardship and Science directorate. These staffs are available to consult on regular basis with parks wanting to maintain meat in a condition that is appropriate for human consumption. [Note: at the time of writing Captain George Larsen (george_larsen@nps.gov) stationed at Yellowstone National Park is the USPHS employee with the most expertise in this area.]

It is important to cool an animal as quickly as possible after death to maintain meat quality. This usually means removing the organs of the animal in the field. Depending on ambient temperatures, field removal options, data collection and disease testing needs, and storage options this may mean deboning the animal in the field and putting meat in game bags or it may mean removing the entire animal from the field either whole or in quarters. Processing should be efficient and focused on keeping meat from being

contaminated with fecal or gut material as well as dirt and other debris. Knives should be kept clean. Meat can also be cleaned at a later time during processing but should always be handled with care and attention. Exact requirements for holding temperatures and best management practices for meat donation should be discussed prior to project implementation with USPHS staff. Finally, there are a wide range of options for donation of meat. The entire carcass, carcass without entrails, skinned and quartered carcass, deboned meat, or fully processed and packaged meat can be donated. Logistics and meat holding times will depend on the resources available (i.e., refrigeration trucks, meat lockers, meat processors, individuals doing their own meat processing, state cooperation, etc.). Meat derived from wildlife resources is not U.S. Department of Agriculture inspected and there is no guarantee of meat quality. Recipients should be made aware of this. There is, however, an expectation that products donated by the NPS are known to not be harmful or detrimental to human health.

Disease testing

There is only one disease, chronic wasting disease (CWD) which is routinely tested for in culled and donated wildlife species. Most cervids (deer, elk, and moose) are tested prior to donation. This testing is performed to better understand and surveil for the disease in wildlife. It is not a food safety test. However, if an animal is tested for CWD it should not be donated until after the test results are available. While CWD is not known to affect humans, positive carcasses should not be donated for human consumption. A meat donation waiver that accompanies meat from CWD endemic areas is strongly recommended and should list the precautions that have been taken to prevent CWD from entering the human food chain. Other diseases may be tested for depending on local conditions at the park. Any animal that appears sick at the time of culling or has abnormal lesions observed at butchering should be removed from the human food chain. Disease testing is never for food safety and does not guarantee a safe product. If an animal is found to have lesions either during butchering or during a field necropsy it should be submitted for further evaluation through a veterinary pathology laboratory or through the NPS Biological Resources Division-Wildlife Health Branch. (Contacts can be found at the Wildlife Health Branch website)

Summary

Engaging public volunteers in the removal of wildlife from NPS units is a relatively new and novel management and stewardship approach that a few parks have utilized. It is important to emphasize that this is not a one-size-fits all management option. There are no exact requirements for this kind of a volunteer program, but it is necessary to follow Volunteer Program Guidelines and Requirements. The best outcomes generally occur when a clear biological need has been demonstrated, when there is good communication and cooperation with state wildlife agencies, when animals can be reasonably accessed by members of the public in a safe and efficient manner, when visitor use is minimally impacted and when NPS staff understands the process and logistics of killing and processing animals. Park staffs need to balance safety concerns for volunteers, staff, visitors, and the public with animal welfare issues and overall program efficiency. These factors need not be weighted equally and the optimal balance will depend on site-specific circumstances. For example, direct supervision of public volunteers can increase safety and decrease animal welfare concerns but may not be warranted if highly skilled volunteers are chosen. Alternately, in Eastern parks in ex-urban landscapes, it may be necessary to have higher levels of NPS supervision.

In summary, the following concepts should be considered when implementing an NPS public volunteer culling program:

- Public perception of NPS professionalism and credibility is important for program success. Public volunteers culling wildlife is a new management tool that is likely to be highly scrutinized from a

wide variety of viewpoints. It will be important to be transparent about our programs and thoughtful about implementation practices.

- Animal welfare is important to the public and to the NPS and should be considered in all aspects of project planning and operations.
- It is important to use an adaptive management approach to a program that engages public volunteers. This is a management action that should be evaluated like any other responsible and well informed management action at the park. This means gathering biological, technical, and economic data on the program as it occurs and periodically evaluating whether or not it is meeting NPS management goals.
- Consistent communication is critical. The park should have a well-developed communication plan shared with park staff, the local community and other engaged partners such as the State.
- Ultimately, the most successful programs will optimize safety and efficacy.

Submitted by:

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For additional information please see:

Powers, J., R. Kahn, W. Whitworth, J. Mack, and B. Bobowski. 2016. Elk management in the National Park Service: Two case studies in the use of public volunteers. Natural Resource Report NPS/NRSS/BRD/NRR—2016/1119. National Park Service, Fort Collins, Colorado.

Nie, M., C. Barns, J. Haber, J. Joly, K. Pitt, and S. Zellmer, "Fish and Wildlife Management on Federal Lands: Debunking State Supremacy," Environmental Law, 47, no. 4 (2017)

VIP Culling document.pdf

On the Use of Public Volunteers to Cull Wildlife in the National Park System

The purpose of this document is to assist and support National Park Service (NPS, Service) managers who are considering implementation of wildlife culling operations where public volunteers will participate in associated stewardship actions. This guide is not meant to prescribe the activities for any specific NPS unit. Instead, it describes the breadth and depth of issues which should be considered and decided upon at the local level. There is no one public volunteer culling model that will fit perfectly for every park. There are, however, lessons learned which may be helpful to other units in the system. Consulting with other NPS managers who have been through this process is strongly encouraged as is partnering with state wildlife management agencies and neighboring land management agencies whenever practical and appropriate.

Background

The NPS is unique among federal land management agencies in its mandate regarding hunting. Unlike the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS), NPS lands are closed to hunting, except where it is specifically authorized by Congress. There are approximately 76 (of 417) NPS units open to hunting, most of which are named as National Preserves, National Seashores, or National Recreation Areas. None of the units named as National Parks have public hunting (though one, Grand Teton National Park, has a statutorily mandated elk reduction program that temporarily deputizes state licensed hunters for elk reduction but is not technically considered a "hunting park").

This long standing legal requirement of prohibiting public hunting in national park units has resulted in the NPS managing overabundant wildlife in a variety of alternate methods through the last century. It is important to acknowledge that in the first 30 years after establishment of the Service in 1916, many wildlife populations, particularly ungulates, were at historically low levels as a result of market hunting, habitat degradation, and unregulated sport hunting in the late 19th and early 20th centuries. As populations of ungulates began to recover in the mid-20th century, the NPS and other land managers recognized that increasing populations were having significant negative impacts on vegetation and other natural and cultural resources. The NPS began to cull mule deer and elk using NPS and state wildlife agency personnel in some western parks as early as the 1930s, and this practice continued through the 1960s. In 1963, an NPS advisory board chaired by A. Starker Leopold released a report that stated that "A national park should represent a vignette of primitive America" (Leopold p.3) and "Above all other policies, the maintenance of naturalness should prevail." (Leopold p.6) These ideas were both formally and informally adopted by the NPS and governed the management of ungulates for almost 30 years. The concepts of allowing nature to run its course and minimizing active population management were applied throughout the Service. But the Leopold Report also contained the following recommendation: "as removal programs (for wildlife) increase in size and scope, the NPS may find it advantageous to employ or otherwise engage additional shooters from the general public" (Leopold p.14). This advice was not followed during the 40 year period from the mid-1960s to the mid-2000s.

By the late 1980s and early 1990s, NPS managers at many parks were aware of significant issues with increasing populations of white-tailed deer in the East and elk in the West. There were significant documented impacts on ecosystems and park resources, risks to public health and safety, and frustration among neighboring land owners. Managers grew concerned about continuing this "hands off" policy of wildlife population management. In the mid-1990s NPS again initiated culling by agency personnel or hired contractors, such as the USDA/Animal and Plant Health Inspection Service/Wildlife Services.

Other alternatives for reducing effects of ungulates and protecting park resources were often considered during planning efforts and in a few specific cases were implemented. These options include translocation, predator restoration, wildlife fertility control, and fencing to protect vulnerable plant species. At the present time, only fencing is used on a regular basis. Until recently, there has been little

direct public involvement in wildlife management actions on NPS lands other than through the public planning process. However, in the past 10-15 years, there has been increasing public and state wildlife agency support for direct public involvement in removal of excess wildlife from NPS lands. In 2009, Rocky Mountain National Park, and in 2010, Theodore Roosevelt National Park, began using public volunteers to assist with elk culling and in 2016 the NPS compared and contrasted these two programs. For additional information on these projects see Natural Resource Report NPS/NRSS/BRD -2016/1119.

The Service found that implementing public volunteer programs to cull wildlife generated significant support from some constituencies such as state wildlife agencies, rural communities, and sportsmen; however, these types of programs also generated negative responses from anti-hunting groups and some traditional NPS visitor support groups. The fiscal costs are highly variable and depend on the specific logistics of each program. At Theodore Roosevelt NP, the cost per animal was less when the public was engaged than when agency culling was used alone. At Rocky Mountain NP, all animals were taken by volunteers and therefore it was difficult to compare costs of agency only versus volunteer culling. The recommendations to other parks considering this option include: thorough public outreach efforts, site specific analysis of biological and social issues, and a cost benefit analysis by NPS leadership including the political gains and liabilities.

The use of public volunteers is primarily relevant to NPS units where public hunting is not authorized by law. In NPS units open to hunting, it is generally less expensive, more efficient, and more politically acceptable to use public hunting seasons following consult with the relevant State, and with or without state coordination on implementation, in order to achieve the necessary removals to achieve resource management goals. However, there may be certain situations where the NPS might choose to use public volunteers in a hunting-authorized unit; this could include situations where there is no public hunting season available for a specific species, or recreational harvest is not effective due to lack of interest, timing, coordination or other regulatory or social reasons.

Laws

There are multiple federal statutes, regulations and NPS policies relevant to the use of public volunteers in National Parks as a means of reducing wildlife populations.

54 U.S.C. § 100101(a), also known as the "NPS Organic Act," gives the Service the authority to "promote and regulate the use of the National Park System by means and measures that conform to the fundamental purpose" of its units, "which purpose is to conserve the . . . wild life and provide for the enjoyment . . . in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations". This is a clear mandate from Congress that the NPS has authority over wildlife on its lands, except as otherwise specifically provided by federal statute. This is an important distinction between NPS and other federal land management agencies, such as the Bureau of Land Management (BLM) and the US Forest Service (USFS) where authorities for wildlife management are not as clear and where certain actions, such as management of many wildlife populations have been relinquished to state wildlife agencies.

In addition, 54 U.S.C. § 100752 allows NPS to "provide for the destruction of such animals and plant life as may be detrimental to the use of any System unit". This law allows the NPS to develop and implement programs to destroy native or non-native animals that it deems to be detrimental to the fundamental needs of a specific unit. Historically this has been used to support reduction or elimination of non-native and invasive species, but it also supports reduction of native species, and in particular ungulates like mule deer, white-tailed deer, and elk in situations where they have exceeded ecological or social carrying capacity and have negative impacts on park resources.

Finally, 54 U.S.C. § 102301 gives the NPS the authority to "recruit, train and accept the services of individuals without compensation as volunteer for or in aid of other activities in and related to System units and related areas". Historically these volunteers have focused on interpretive and visitor functions; however, their use in other activities, such as wildlife management, has also occurred. These three federal statutes form the legal basis and authority for the NPS to manage wildlife and also to engage the public as volunteers to assist in situations where populations need to be reduced for ecological, social, and other reasons.

Regulations

NPS regulations at 36 CFR § 1.4 contain definitions of wildlife and hunting that are relevant to wildlife management, and 36 CFR § 2.2 contains NPS's prohibition on hunting except in units with specific statutory authorization for it, as well as additional provisions applicable to hunting. However, these regulations apply primarily to visitor activities, and not to NPS management actions. Wildlife reduction falls under the regulatory exemption for administrative activities carried out by NPS, 36 C.F.R. § 1.2(c), and as a result it is not directly subject to these regulations. Finally, 43 CFR §24.4 addresses resource management on Department of the Interior lands. Paragraph (5) requires consultation with states on a number of actions including "the planned and orderly removal of surplus or harmful populations of fish and wildlife". However, there is an exception that says consultation is NOT required "when the Secretary determines that such compliance would prevent him [or her] from carrying out statutory duties". Consultation can be accomplished through formal National Environmental Policy Act (NEPA) planning processes or through informal meetings and dialog.

Policies

There are no specific policies in Management Policies 2006 that directly deal with the use of public volunteers for wildlife culling. However, Section 7.6.1 discusses a variety of activities in the Volunteers in Park (VIP) program yet only mentions wildlife culling in the context of interpretation and education. Section 4.4.2.1 *NPS Actions that Remove Native Plants and Animals* is applicable as it supports removal of native animals only when it can be done without unacceptable risks to native resources, natural processes, or other park resources. This section also specifically allows for the removal of native wildlife "by NPS personnel or their authorized agents." It further states that when such removals occur the "destroyed animals may be left in natural areas" and allowed to decompose unless there are circumstances where carcasses should be removed for human health, safety and other reasons. This policy further states that live animals or carcasses may be removed from parks according to applicable laws, regulations or agreements, including preferences for Native Americans.

Differences Between Culling and Hunting

As discussed above, the destruction of detrimental animals as part of NPS wildlife management activities, or culling, is governed by different authorities than public hunting of wildlife by park visitors. It is important for NPS managers to be aware of the distinctions between the two and to consistently manage and refer to them as distinct activities.

NPS received some guidance on these distinctions in a 2011 decision by the U.S. District Court for the District of Colorado that rejected a challenge to the elk management plan at Rocky Mountain National Park (*WildEarth Guardians v. National Park Service*, 804 F. Supp. 2d 1150 [2011]). The plaintiffs in that case argued in part that NPS's use of public volunteers to cull elk violated the legal prohibition of hunting in the park. In rejecting that argument and upholding the NPS plan, the court discussed several key ways that the elk culling differed from hunting, namely: the **purpose** for destroying the animal, the **manner** in which the destruction occurred, and the **disposition** of the animals that were killed. First, culling is done exclusively for conservation and stewardship purposes, while hunting is done primarily for recreation or

procuring food. Second, culling is conducted under controlled circumstances under the supervision of NPS personnel, while hunting is performed at the hunter's discretion (subject to applicable licensing and laws) and with elements of "fair chase". Finally, hunting allows and most often requires the person taking the animal to keep the meat, while culling does not. The court's opinion finished with the following: "put simply, culling serves the public purpose, while hunting serves both public and private purposes".

The U.S. Court of Appeals for the Tenth Circuit later affirmed this decision in an opinion that for most purposes is more legally authoritative, 703 F.3d 1178 (10th Cir. 2013), but because it did not discuss the distinction between culling and hunting in the same detail, the District Court opinion remains a useful source of guidance on that point. It is not entirely binding on NPS actions—culling programs do not necessarily need to mimic the Rocky Mountain National Park elk plan in every detail—but culling that follows the principles discussed can be seen as more likely to withstand any potential legal challenges.

Maintaining these distinctions between recreational hunting and culling is thus a critical aspect of instituting a public volunteer reduction program. There are other aspects of these distinctions that NPS managers should be aware of.

Licensing: All recreational hunting in the U.S. requires a state issued hunting license (the only exceptions may be damage control on private lands for certain species [some of which are not classified by states as wildlife]). There is no requirement that public volunteers on NPS lands not open to hunting have a state issued hunting license. In fact, culling appears less like hunting if no license requirement is mandated by the NPS. Some states that are partnering in these programs may desire the NPS to make this a requirement, but it may not be prudent as it can blur the distinction between hunting and culling. In addition, most states require a hunter education certificate (issued by states after taking a course) before a hunter can purchase a license. Parks might consider this option as one of the multiple requirements for prospective public volunteers. It gives the NPS knowledge that the person applying has had some firearms and safety training. However, requiring a hunter education certificate does not mandate requiring a state hunting license for culling purposes. The most important aspect of this concept is that volunteers have the skills necessary to perform the culling operations. These skills can be evaluated in a variety of ways (see *Volunteer Selection* section below).

State Regulations: Most hunting occurs in the U.S. under a series of laws and regulations that dictate criteria that hunters must follow. These include limits on the species and number of animals that may be killed, seasons for specific species, types of weapons and ammunition allowed, safety clothing, and fair-chase rules, among others. It may be important for the NPS **not** to fully follow the state regulations for the species that the NPS is culling. For example, NPS may not follow state limits on the number of animals that can legally be removed, whether as a daily or season restrictions, if they interfere with NPS's management goals or decrease the efficiency of culling efforts. In many situations there are opportunities for one shooter to kill multiple animals and achieve culling goals more quickly and efficiently than if the NPS were to follow applicable state rules. State wildlife agency rules or laws that regulate safe hunting activities, such as blaze orange, shooting from or across public roads, and carrying loaded weapons in vehicles should be considered by parks as potential safety measures that could be adopted for culling programs. The NPS must be considerate of stewardship goals and objectives when designing their project implementation plan.

Fair-Chase: Fair-chase is a philosophy that governs and limits the use of certain tools that would make hunting easier and give hunters a distinct advantage. Laws and regulations regarding fair-chase are not consistent between states. Techniques that fall outside of fair-chase may include the use of aircraft, vehicles and lights to kill wildlife, hunting over bait, hunting in situations where wildlife is artificially constrained by fences, and the use of electronic devices to attract targeted wildlife to certain areas. However, many of these tools and techniques might be valuable to aid the NPS and public volunteers in the efficient reduction of targeted species. Under a culling program the principles of fair-chase are not

applicable, and may run counter to the overall goals of the program. Two techniques that parks have used are the use of bait to attract animals to areas that are safe and convenient for culling, and the use of radio-collars to identify animal locations for more efficient culling operations.

Table 1: *Park attributes*

	ROMO	THRO	WICA	HAVO	EVER
Species	Elk	Elk	Elk	Non-native Mouflon sheep	Non-native reptiles
National vs state volunteer selection	National	National	State	National but mostly local	National but mostly local
State hunting education course required?	No	No	Yes	Yes	No
Hunting license required?	No	No	No	Yes	No
Meat distribution through the state?	Yes	Partially	Yes	No	N/A
Shooting test required?	Yes	Yes	Yes	No	N/A
VIP agreement required?	Yes	Yes	Yes	Yes	Yes
Criminal background check required?	Yes	Yes	Yes	No	Yes
Volunteer period	At least one season	5 days	5 days	1 day	At least 5 days in a 6 month period
Volunteer uses NPS firearm?	Yes	No	No	No	N/A
NPS or public supplied non-lead ammunition?	NPS	Public	Public	NPS and public	N/A
Meat distribution	Public lottery	Volunteers (through ND), tribes, charities (directly)	Volunteers (directly), charities and tribes (through SD)	Volunteer meat recovery person directly	N/A
Carcass storage	Commercial meat locker	Refrigerated truck on site	Refrigerated truck on site	N/A	N/A

Use of Volunteers in Parks to Cull Wildlife

There are five park units that currently or in the recent past have used public volunteers to remove wildlife (see Table 1). At Theodore Roosevelt National Park (THRO), Rocky Mountain National Park (ROMO), and Wind Cave National Park (WICA) three unique programs were used to kill elk. All three used members of the public to shoot elk and assist with dressing, cleaning, and storing the meat. Each program was different in the method of volunteer selection, the amount of training and supervision, the efficiency of removal, and the cost; however, they all worked closely with their respective state wildlife agencies to distribute the meat derived from these programs. At Hawaii Volcanoes National Park (HAVO) members of the public are brought into units where non-native Mouflon sheep removal is occurring. Two volunteers are given the opportunity to shoot and a third person can retain the meat from as many animals as the team can remove per day. A state hunting license is required at HAVO but not at the other parks where volunteers are removing wildlife. At Everglades National Park (EVER) members of the public can sign up as agents of the park to live capture Burmese Pythons and other non-native reptiles

and amphibians. Injurious wildlife is then placed in bags and collection bins within the park and park staff is responsible for analysis and disposition of the animals. A current Volunteer in Parks agreement is required in each of these parks to complete this work. Costs and staff time vary widely between parks and depend on how intensively the program is managed. To date, all programs where firearms are used have at least one NPS employee with the volunteers at all times.

Where might public volunteer culling be effective?

Engaging public volunteers to remove wildlife may be a useful tool in other NPS units. At the present time there are four parks that have ongoing formal NEPA planning processes that include an alternative to use public volunteers; these include Grand Canyon National Park (bison), Olympic National Park (mountain goats), and Great Sand Dunes National Park and Preserve (elk), Chesapeake and Ohio Canal, and Harpers Ferry National Historical Park (white-tailed deer). There are common biological, socio-political, and logistical attributes of parks that lend themselves to engaging public volunteers.

Biological environment

There should be documented adequate demonstration of the problem and impacts caused by overabundant wildlife species. Documenting effects of overabundant wildlife can take years of data collection and analysis and may require specific biological expertise. Some NPS units may not have this expertise on site and partnering with outside researchers (e.g., U.S. Geological Survey staff), the NPS Inventory and Monitoring Division, universities and contractors, is encouraged in order to assist with this biological evaluation. Or, as in EVER, the purpose of the volunteer program itself may be to acquire individual animals to aid in understanding the problem and developing an appropriate management strategy. These analyses may include habitat and vegetation assessments, loss of or damage to key indicator species, or potential impacts on species of special concern (e.g., threatened and endangered species and their habitats, local species of concern), or detection or removal probabilities of the target species itself. There should also be sufficient ecological and demographic information about the target population to make informed choices on how many animals, and of which sex and age class to remove to meet and sustain population management objectives. Finally, it is important to understand animal accessibility. Knowing wildlife distribution and abundance, what migration or movement patterns are, and when and to what extent they use NPS lands and their impacts, are critical.

Social environment

The use of public volunteers has many internal and external social issues that park managers should consider. This is a relatively new tool and NPS employees may not be comfortable or familiar with members of the public using firearms in parks or with the public being involved in activities that have traditionally been performed by NPS employees or other professionals. Despite these concerns, several National Parks, with internal as well as external support, have successfully implemented public volunteer culling programs.

Local, regional, and national stakeholders often have strong feelings about the benefits and detriments of using public volunteers to cull wildlife. Nationally, there are many pro-hunting and wildlife conservation organizations that support the use of public volunteers as a tool for wildlife management in the National Park System. Many of these groups have robust political support and have used their influence in various public processes to seek greater use of public volunteers. Conversely, there are a number of animal welfare, environmental conservation, and national park support groups that have expressed strong opposition to the use of public volunteers for culling activities as it closely resembles recreational hunting. As discussed above, NPS was sued by one such group over the Rocky Mountain National Park elk management plan, in part over the use of public volunteers. Parks considering the use of public volunteers should reach out to both sides of this issue and have an active program for stakeholder

engagement at the national and local levels; this is both to inform and prevent either side from diverting planning processes and decisions with political intervention.

At the local level, support for or opposition to public volunteers depends on a variety of factors; key among them are local government, local land-owners, and other constituents. All of these stakeholders should be well informed of decision making processes and be invited into the conversation. Urban and ex-urban constituents tend to focus concerns on safety issues, effects on visitation and local economies, as well as placing more emphasis on animal welfare issues. In contrast, rural constituents often have concerns about impacts to private property and agricultural interests. Additionally, they tend to focus on impacts on local hunting opportunities. This was the situation at Theodore Roosevelt NP in North Dakota where there was great public interest in elk culling opportunities that was compounded by few opportunities for elk hunting in the state. If there are ample hunting opportunities locally there may be less support from hunters and state wildlife agencies for using public volunteers. This was the scenario at Rocky Mountain NP where there is a great deal of public hunting available for elk in the state and thus less interest to participate in controlled culling activities. Likely the best source of information regarding local hunting communities will be state wildlife agencies. They work with and know this constituency well and can provide key information to parks regarding the potential interest from the state hunting community. In addition to local hunting interests parks should be aware of the concerns of local landowners, be they private, county, state or federal and ensure that their opinions are taken into consideration prior to making decisions.

In addition to understanding national and local publics, it is important to understand the how culling operations are perceived in light of societal ethics. For example, considering whether females have dependent young at the proposed culling time (e.g., April-August for most ungulates) is important. If it is necessary to remove females during this time consideration should be given to removing their offspring as well. Similarly, due to animal welfare concerns significant effort should be made to minimize wounding losses. Finally, culling of male animals, such as buck deer or bull elk is often necessary to achieve population goals and to mitigate habitat issues. If so, then a good solution is to wait until antler drop, if possible. This reduces the perception that trained volunteers are targeting trophy males and thus reducing desirable public hunting opportunities outside of NPS boundaries.

Logistical constraints

Funding

On-the-ground logistics and personnel experience often dictate the nature of the volunteer program. Recent volunteer programs have been resource intensive, both in terms of costs and employee time. Specific costs for implementation of two elk culling programs has been analyzed and can be found in Natural Resource Report NPS/NRSS/BRD -2016/1119. Future programs may be more efficient and less expensive depending on the intensity of the culling effort and the level of oversight individual parks find necessary. Pursuing funding for implementation at the same time as finishing planning compliance will make removal operations more expedient.

Timing

The timing of trained volunteer actions depends on many variables. Removal periods should be prioritized based on efficiency of removals and optimizing safety for staff and volunteers while minimizing impacts to other park visitors. One important factor is deciding whether or not removal efforts will be in conjunction with hunting seasons outside the park. In some situations efforts are coincident so as not to create a refuge situation either inside or outside of the park and therefore maximize efficiency. Alternately, it may be necessary to cull animals during the summer months when volunteers can most effectively access backcountry habitat but most public hunting is not available. Similarly, it is important

to consider if it is possible to differentiate males and females easily at the time of year considered for removal operations. Generally, it is desirable to focus on removal of females if the goal is population reduction or stabilization. Additionally, it is often perceived more favorably by stakeholders if females rather than males are removed, particularly in situations where there is public hunting focused on male harvest adjacent to NPS properties. However, there are instances where it may be more important to remove males, such as when there is disease that carried or shed more often by one sex.

Time of day

Most wildlife species are more active in early morning and late evening and thus these can be productive times to focus culling efforts. These are also periods that may not correspond to peak visitor use. Depending on local conditions, night culling over bait and with lights or night vision optics can be very effective and this time may avoid visitor conflicts. However, night removal raises safety issues and needs to be carefully coordinated. By using stands or specific shooting areas and not allowing volunteers to randomly move around after dark, safety concerns can be mitigated. During all of the public volunteer removal operations conducted to date volunteers operated during daylight hours.

Location

Depending on the species and park terrain, culling locations will vary significantly. Site selection criteria should include areas where animals are readily available and at a density that allows for adequate efficiency. When the target species is white-tailed deer, an animal with a relatively small home range, culling can usually be done in any portion of the home range and should be targeted to areas that are distant from high visitor use. Use of tree stands and bait can significantly increase culling success. Conversely, elk and other large ungulates are often migratory and may not stay in a park year-round; thus culling should occur when animals are available and concentrated in the park. Given the direction already noted to avoid times with dependent young, this may constrain available locations.

Culling is more efficient if there is relatively easy access for trained volunteers to access the targeted species. Use of radio-telemetered sentinel animals (i.e., Judas animal) can increase efficiency when locating groups of herd based animals. Requiring lengthy walking to access culling areas and remove carcasses can reduce efficiency, though may be necessary (wilderness areas). Theodore Roosevelt NP packed quartered animals out of the backcountry in backpacks and via pack horses whereas Wind Cave NP used ATV/UTVs to remove entire intact carcasses. Rocky Mountain NP gutted the animals at the kill site and sledded carcasses short distances to the road by hand. Hawaii Volcanoes NP had moderate hikes to access Mouflon carcasses that were brought out in backpacks. In addition to the level of difficulty in accessing animals and carcasses, wilderness regulations add to the complexity and analysis. Without access to motorized vehicles, efficiency will be decreased in most situations.

Parks should also consider impacts to other visitors. Closing areas to public use during culling operations may be warranted. Theodore Roosevelt NP and Wind Cave NP closed the backcountry to visitor use during the culling operations whereas Rocky Mountain NP did not close areas but conducted low intensity operations at times when visitors were not typically present. At Hawaii Volcanoes NP, in units where culling occurs limited visitation is allowed but only during non-culling times. Potential visitor closures are often controversial and should be considered during the planning processes.

Volunteers

Selection

Selection of public volunteers who have the skills and attitude necessary for a successful culling operation is critical. First, the pool of potential volunteers from which to select must be identified. The NPS is a national organization and as such, one potential pool is all interested U.S. citizens. Depending on method

and intensity of advertising, this may create a large pool of potential applicants and may be difficult to manage. Theodore Roosevelt and Rocky Mountain NPs advertised nationally, through websites and other media outlets and Theodore Roosevelt NP in particular drew intense national interest, which added to the overall cost of managing the program. In contrast, Wind Cave NP, in cooperation with South Dakota Game Fish and Parks (SDGFP), used only the SDGFP hunter data base as the potential applicant pool. Because South Dakota restricts elk hunting to only residents this restricted the pool to in-state hunters. This decreased the cost of volunteer selection. Early on at Hawaii Volcanoes NP, there was national advertisement and interest in of the program. However, after the initial 8 years, the park took a break to implement a planning process and since then has focused on local advertisement and meeting the interest of local communities although the program remains open to any U.S. citizen who meets the requirements. Similarly, Everglades NP has focused on local residents with knowledge of constrictor snakes and maximizing effective participation over time. They used word-of-mouth and the park website to build a network of volunteers who are willing to return multiple times but the program remains open to anyone who meets the requirements.

In some situations, an efficient system may be to use a state data base of hunters who have an expressed interest in the targeted species; however, this then requires that a person be a state licensed hunter in order to be considered and may not be perceived as a fair process by non-hunters or people from other states. Conversely, an NPS derived selection process that extends beyond state boundaries may be more defensible given that the National Park System is managed for all members of the public. There are no known legal constraints regarding local, state, or national selection processes, nor have there been any specific challenges to date in existing NPS public volunteer culling programs.

Beyond geographic location of potential volunteers, a method of evaluating and selecting volunteers based on their skill sets and attitudes towards culling, hunting, and conservation is a critical need. This may include a shooting proficiency test, self-certifications of fitness and/or skill in meat processing, oral/written interviews by NPS staff to determine experience of the volunteer, demonstration of these skills prior to allowing a volunteer to participate, and/or on the job training. A method of confirming a volunteer's eligibility to possess a firearm under the Gun Control Act (1968) and Lautenberg Amendment (2001) is required (e.g., criminal background check, Lautenberg certification). Different methods have been used at each park. The most intense screening process was at Rocky Mountain NP, which required an extensive written application, criminal background check, in-person interviews including their personal views of conservation and hunting, and a shooting test. Additionally, they required two days of classroom training and one day in the field as a dry run. Conversely, at Theodore Roosevelt NP there were no in-person interviews. Self-certification of physical capabilities and an on-site shooting test were the only requirements in addition to a half-day classroom orientation. Despite these self-certifications there was significant drop-out due to physical limitations and failure of the shooting test (~20-25%). More intensive screening processes and training add to program costs. The amount of training and screening needed may be a function of the complexity of the program and the level of controversy that culling has generated among stakeholders, as well as site-specific safety issues. This will need to be decided on a park by park basis.

Supervision

Clearly, evaluation and encouragement of skills related to knowledge and use of firearms, killing and dressing large animals, and working in a team environment takes tact and experience on the part of NPS employees functioning as volunteer supervisors. Employees who are supervising volunteers using firearms to cull wildlife must have high skill levels in these fields themselves which often means they may have traditional hunting backgrounds or have participated in wildlife culling in the past. Additionally, they must have high levels of maturity, excellent interpersonal skills, and enthusiasm for leading people by demonstrating a good example. Supervisors must also know what to do in the event of a medical emergency; therefore basic or backcountry first aid and CPR are important skills. Finally, an

excellent working relationship between direct supervisors and other NPS staff, particularly law enforcement and interpretation, may facilitate positive outcomes if there is a human-related emergency in the backcountry. Given the diverse nature of these operations, NPS staff with both biological and visitor safety backgrounds are needed to coordinate a successful program.

Supervision of volunteers can be intensive or extensive. For example, at Rocky Mountain NP, the Incident Command System was employed during public volunteer operations; whereas at Everglades NP volunteers work unsupervised by NPS employees. To date, when firearms are used at least one NPS employee has directly supervised 1-4 volunteers. Depending on the difficulty of finding animals, the terrain that is covered, fitness of the volunteers, difficulty in removing meat safely from the field, and circumstances surrounding visitor safety, different parks may require more or less supervision. In most parks volunteers also help with data collection and dressing and processing meat. It is important for supervisors to emphasize the importance of accurate data gathering and hygienic meat processing techniques as many volunteers may not have experience in these areas.

Those public volunteers who have a positive relationship with their VIP supervisors and view their culling experience as beneficial often become long term advocates and ambassadors of the Park and the NPS (Natural Resource Report NPS/NRSS/BRD -2016/1119). Volunteers with the time and means to engage in these types of programs are most often members of the local or at least regional communities. They often return to the park and engage in other volunteer opportunities such as vegetation monitoring, data collection, or wildlife surveys. To date, the overwhelming majority of volunteer experiences have been positive and they are eager to share their experiences with others in their communities. They bring legitimacy to the culling programs by telling their communities the reality and dispelling the myths of the culling programs. They often speak with the press or on social media sites and can tell their stories publically, again validating the NPS programs and their wildlife management and stewardship goals. The positive nature of their stories is most often directly related to their experience in the culling program. When the supervisor made them feel useful, engaged, and a valued member of the team, their stories often reflect this. The unique nature of the experience also adds to the affirmative feedback that volunteers give. Therefore, selecting the appropriate supervisors is of utmost importance.

Method of take

There are a variety of weapon types available to cull wildlife. This decision should be based on a number of factors including: the targeted species, safety, noise issues, and efficacy of the weapon. Tolerance for wounding issues and local social norms surrounding firearms will also influence this decision.

Only non-lead ammunition should be used in culling operations per Director's Memo dated March 4, 2009. This policy is to protect human and wildlife health, reduce impacts on the environment and minimize spent lead in soil entering the food chain via scavenging. While non-lead ammunition may be more difficult to find and more expensive to purchase than traditional lead bullets, it is an NPS requirement in culling activities. Volunteers may not be familiar with using non-lead ammunition. Parks can offer to provide non-lead ammunition to volunteers to use in personally owned weapons, or they can provide standardized weapon and ammunition combinations to volunteers. Alternately, parks can require volunteers to bring their own weapon and ammunition of appropriate caliber. Requiring the use of NPS firearms provides a level of consistency but may be a burden to participants as most volunteers already own and are most comfortable with their own weapons. There is a significant cost to parks if they decide to purchase and maintain weapons for culling and this may not be necessary to ensure program success (see Table 1).

Rifles

High powered, scoped, center fire rifles are generally the most efficient tool for culling large ungulates. They have a greater range, greater killing power, and widespread availability that make them a logical choice. The high accuracy and killing power make them more efficient and effective than other weapons and there is less wounding loss. However, bullets can travel long distances, more than a mile in certain situations, therefore it is important to know the backdrop and final disposition of the bullet if the target is missed. In urbanized or high use areas this can create safety concerns. Restricting the use of rifles to certain areas or requiring volunteers to be located in stands or against safe backdrops can dramatically reduce risk, but it also limits efficiency. Rim fire rifles (.22 caliber) are generally not a viable tool for culling ungulates. They do not have enough power to efficiently kill larger animals (white-tailed deer and larger) and can still travel distances up to one mile; therefore, their use is not recommended. Appropriate caliber and grain of ammunition is species and environment dependent. State wildlife agencies often have requirements for caliber and grain for a given species that may be adopted by parks. Other sources of information on ammunition size are available from NPS law enforcement personnel and from other parks that have engaged in culling, either internally or with the public. Semi-automatic high powered rifles are legal to use in many states; however the number of bullets allowed in magazines varies by state. For safety reasons, it is recommended that parks consider adopting rules consistent with state law that restrict the total number of bullets available in both the magazine and chamber.

Shotguns

Shotguns shooting either a slug or large shot (00 buck shot for example) are highly effective in killing larger animals, in particular white-tailed deer, but are limited by their effective range. In general, shotguns are effective up to 75-100 yards. In certain situations like forested environments they can be an effective tool for culling. They may be particularly useful in situations where houses, campgrounds, or other human activity occur in the general area. Shotgun slugs will generally not travel more than 300 yards. There are numerous situations where shotguns have been used by hunters to effectively reduce white-tailed deer in urban and ex-urban locations. They are most effective when used in conjunction with tree-stands and over baited areas. In nearly all situations 12 gauge shotguns should be used, as smaller gauges such as 16, 20 or 28 are not typically effective for large mammals. Non-lead shotgun slugs and buck shot is generally widely available.

Muzzleloading rifles

These weapons have similar capabilities to 12 gauge shotguns but are much less efficient as they shoot only one round and then have to be reloaded. Given this reduced efficiency they should not be considered for culling.

Archery

Archery equipment has evolved in recent years and has become more efficient with the use of compound bows. Archery is effective up to 50-70 yards and arrows tend to travel less than 150 yards in most situations. Given these parameters archery could be utilized by public volunteers in specific situations where animals are found in close proximity to developed areas. Generally, archery is most efficient when combined with the use of blinds or tree stands and efficiency is maximized for culling if done over bait. Another potential benefit of archery is the lack of sound impacts as compared to firearms. One significant drawback of archery is that wounding loss is increased and wounded animals may leave the park and not be recovered. Additionally, archery is less efficient than other methods given the time it takes to shoot multiple arrows and may not be appropriate for large body size animals such as bison. The park must considered volunteer skills and animal welfare aspects in this type of weapon use.

Carcass disposition

While retention of meat is not required by law or NPS policy, it is consistently an important ethical consideration when deciding on the disposition of the culled animal. State wildlife agencies, the general public, and NPS staff generally agree that using the meat for human consumption is a positive outcome from a culling operation (Natural Resource Report NPS/NRSS/BRD -2016/1119). NPS's authority to "provide for the destruction" of detrimental animals also allows for disposition of the remains of these animals, whether it is via meat donation to state wildlife agencies, charities, tribes, or individuals or to dispose of the carcasses in other ways such as decomposition on the landscape or left for scavenging or through the use of landfill, incineration, or alkaline digestion. All options are available for disposition of carcasses. Parks should be aware of the cultural and political sensitivities of methods which appear to waste edible meat or otherwise discard what may be culturally valuable portions of the carcass. While there is no legal prohibition against allowing a volunteer to keep an animal the VIP culls or its meat, it is important to note that this weakens one of the distinctions between volunteer culling and hunting (as discussed above).

In general, there is strong support for salvaging valuable portions of the carcass and making them available to tribes, charitable organizations, or volunteers. State wildlife agencies often want the volunteers to be able to retain the meat. To date, parks have generally worked closely with states for meat distribution. At Rocky Mountain NP, the carcass became the property of the state once it was loaded into a truck for transport to a meat locker. At Theodore Roosevelt NP some meat was donated to the state and this was in turn donated to the volunteers and the remainder of the meat was directly donated to tribes or food banks. At Wind Cave NP, all meat was donated to the state and the state donated the meat of one elk to each volunteer with the rest going to charities. At Hawaii Volcanoes NP, meat is salvaged by a third volunteer who is not part of the culling operation and the meat is directly retained by this person. At Everglades NP, once the animal was dispatched by NPS personnel, a full necropsy was performed, data collected, and the carcass returned to the environment to decompose. Disease and toxins must be considered when planning for disposition.

Non-edible portions of animals such as antlers, horns, and hides are often desired by public volunteers and by tribal interests for ceremonial reasons. The retention and donation of these products can be controversial and also make for a less efficient cull. Removing these from the field takes additional time and effort and can reduce time spent in actual culling. However, in some situations, parks may find it advantageous to allow some of these parts to be removed and donated to specific groups or to volunteers depending on local situations. Generally, photographing volunteers in "trophy poses" is discouraged.

Public health

Once a decision has been made to donate all or portions of carcasses it is important to maintain good meat handling protocols to prevent contamination or spoilage. The U.S. Public Health Service (USPHS) has Public Health Consultants stationed within parks throughout the nation as well as a Public Health Veterinarian stationed within the Biological Resources Division of the Natural Resource Stewardship and Science directorate. These staffs are available to consult on regular basis with parks wanting to maintain meat in a condition that is appropriate for human consumption. [Note: at the time of writing Captain George Larsen (george_larsen@nps.gov) stationed at Yellowstone National Park is the USPHS employee with the most expertise in this area.]

It is important to cool an animal as quickly as possible after death to maintain meat quality. This usually means removing the organs of the animal in the field. Depending on ambient temperatures, field removal options, data collection and disease testing needs, and storage options this may mean deboning the animal in the field and putting meat in game bags or it may mean removing the entire animal from the field either whole or in quarters. Processing should be efficient and focused on keeping meat from being

contaminated with fecal or gut material as well as dirt and other debris. Knives should be kept clean. Meat can also be cleaned at a later time during processing but should always be handled with care and attention. Exact requirements for holding temperatures and best management practices for meat donation should be discussed prior to project implementation with USPHS staff. Finally, there are a wide range of options for donation of meat. The entire carcass, carcass without entrails, skinned and quartered carcass, deboned meat, or fully processed and packaged meat can be donated. Logistics and meat holding times will depend on the resources available (i.e., refrigeration trucks, meat lockers, meat processors, individuals doing their own meat processing, state cooperation, etc.). Meat derived from wildlife resources is not U.S. Department of Agriculture inspected and there is no guarantee of meat quality. Recipients should be made aware of this. There is, however, an expectation that products donated by the NPS are known to not be harmful or detrimental to human health.

Disease testing

There is only one disease, chronic wasting disease (CWD) which is routinely tested for in culled and donated wildlife species. Most cervids (deer, elk, and moose) are tested prior to donation. This testing is performed to better understand and surveil for the disease in wildlife. It is not a food safety test. However, if an animal is tested for CWD it should not be donated until after the test results are available. While CWD is not known to affect humans, positive carcasses should not be donated for human consumption. A meat donation waiver that accompanies meat from CWD endemic areas is strongly recommended and should list the precautions that have been taken to prevent CWD from entering the human food chain. Other diseases may be tested for depending on local conditions at the park. Any animal that appears sick at the time of culling or has abnormal lesions observed at butchering should be removed from the human food chain. Disease testing is never for food safety and does not guarantee a safe product. If an animal is found to have lesions either during butchering or during a field necropsy it should be submitted for further evaluation through a veterinary pathology laboratory or through the NPS Biological Resources Division-Wildlife Health Branch. (Contacts can be found at the Wildlife Health Branch website)

Summary

Engaging public volunteers in the removal of wildlife from NPS units is a relatively new and novel management and stewardship approach that a few parks have utilized. It is important to emphasize that this is not a one-size-fits all management option. There are no exact requirements for this kind of a volunteer program, but it is necessary to follow Volunteer Program Guidelines and Requirements. The best outcomes generally occur when a clear biological need has been demonstrated, when there is good communication and cooperation with state wildlife agencies, when animals can be reasonably accessed by members of the public in a safe and efficient manner, when visitor use is minimally impacted and when NPS staff understands the process and logistics of killing and processing animals. Park staffs need to balance safety concerns for volunteers, staff, visitors, and the public with animal welfare issues and overall program efficiency. These factors need not be weighted equally and the optimal balance will depend on site-specific circumstances. For example, direct supervision of public volunteers can increase safety and decrease animal welfare concerns but may not be warranted if highly skilled volunteers are chosen. Alternately, in Eastern parks in ex-urban landscapes, it may be necessary to have higher levels of NPS supervision.

In summary, the following concepts should be considered when implementing an NPS public volunteer culling program:

- Public perception of NPS professionalism and credibility is important for program success. Public volunteers culling wildlife is a new management tool that is likely to be highly scrutinized from a

wide variety of viewpoints. It will be important to be transparent about our programs and thoughtful about implementation practices.

- Animal welfare is important to the public and to the NPS and should be considered in all aspects of project planning and operations.
- It is important to use an adaptive management approach to a program that engages public volunteers. This is a management action that should be evaluated like any other responsible and well informed management action at the park. This means gathering biological, technical, and economic data on the program as it occurs and periodically evaluating whether or not it is meeting NPS management goals.
- Consistent communication is critical. The park should have a well-developed communication plan shared with park staff, the local community and other engaged partners such as the State.
- Ultimately, the most successful programs will optimize safety and efficacy.

Submitted by:

The Biological Resources Division (BRD), Natural Resource Stewardship and Science Directorate (NRSS)

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Elaine F. Leslie, Chief, BRD, NRSS.

For additional information please see:

Powers, J., R. Kahn, W. Whitworth, J. Mack, and B. Bobowski. 2016. Elk management in the National Park Service: Two case studies in the use of public volunteers. Natural Resource Report NPS/NRSS/BRD/NRR—2016/1119. National Park Service, Fort Collins, Colorado.

Nie, M., C. Barns, J. Haber, J. Joly, K. Pitt, and S. Zellmer, "Fish and Wildlife Management on Federal Lands: Debunking State Supremacy," Environmental Law, 47, no. 4 (2017)

BRD Responses to Jean.pdf

(b) (5)

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[redacted]

Re_ VIP Culling docs.pdf

From:	Gustine, David
To:	Happe, Patricia
Cc:	Dewey, Sarah
Subject:	Re: VIP Culling docs
Date:	Tuesday, November 12, 2019 7:26:15 PM
Attachments:	GRTE Mountain Goat Management Plan FONSI (RD Signed 2019-09-27) [508 compliant].pdf

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great, thanks Patti and likewise!

see attached for FONSI.

dave

On Tue, Nov 12, 2019 at 10:58 AM Happe, Patricia <patti_happe@nps.gov> wrote:

> Thanks Dave and Sarah for the call this morning - it was a big help, and I look forward to us working together on this.
> Attached is the document I mentioned that I got from Jenny. I am sending a clean version, their responses to questions raised by someone else, and a version Rich Harris and I marked-up.
>
> --
> Patti
>
> Patricia Happe, PhD
> Wildlife Branch Chief
> Olympic National Park
> 600 E Park Ave
> Port Angeles, WA 98362
> 360-565-3065

--

Dave Gustine, PhD
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307-739-3485

GRTE Mountain Goat Management Plan FONSI (RD S_1.pdf

National Park Service
U.S. Department of the Interior

Grand Teton National Park
John D. Rockefeller, Jr. Memorial Parkway
Wyoming

FINDING OF NO SIGNIFICANT IMPACT

MOUNTAIN GOAT MANAGEMENT PLAN ENVIRONMENTAL ASSESSMENT

Recommended:

16 September 2019

Gopaul Noojibail
Acting Superintendent
Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Date

Approved:

9/27/19

Palmer L. Jenkins
Acting Regional Director, National Park Service Regional Office
Serving Department of Interior Regions 5, 6, 7, 8, & 9

Date

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternatives and environmental impacts associated with implementing a proposed mountain goat management plan in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively, the park).

The purpose in taking action is to 1) aid in the conservation of a native population of Rocky Mountain bighorn sheep whose status is tenuous and 2) protect other park resources and values from the rapidly growing non-native mountain goat population. Non-native mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. Prompt action is needed to remove or substantially reduce the non-native mountain goats from the park to prevent the rapidly growing and expanding goat population from displacing the small and declining population of native bighorn sheep and prevent pathogen transmission.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA. The entire EA is hereby incorporated by reference.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA and public comments received during the EA review period, the NPS selected Alternative C (preferred alternative) to rapidly remove non-native mountain goats from the park by lethal and non-lethal (live capture and translocation) removal methods with modifications to include the use of qualified volunteers to assist in lethal removal activities, and allow for the donation and distribution of mountain goat meat that results from lethal removal activities. These modifications were added to assist the NPS in the management of wildlife in the park in accordance with the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The selected alternative will implement a management plan to reduce non-native mountain goats within the park using lethal and non-lethal removal methods. This alternative best meets the plan's purpose to aid in the conservation of a native population of bighorn sheep located within the park, and protect other park resources and values from the rapidly growing non-native mountain goat population. Most of the removal activities will occur within areas managed as wilderness.

The EA addresses impacts to park resources resulting from aerial and ground-based lethal and non-lethal removals conducted by federal personnel and contractors. The potential authorized use of qualified volunteers to assist federal personnel in the ground-based removal of non-native mountain goats does not create new or increase adverse environmental impacts previously addressed in the EA because ground-based actions undertaken by qualified volunteers are identical to those actions undertaken by federal personnel and contractors.

The removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. However, the ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and

other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; (3) the field conditions present to successfully transport carcasses from the park's wilderness/backcountry to a frontcountry staging area, and (4) the health and safety condition of the meat. Although the donation of the mountain goat carcasses was not analyzed in the EA, it does not change the environmental impacts described in the EA.

Management Framework

Population Reduction (Years 1−5). The goal will be to reduce the number of mountain goats in the population as quickly as possible by lethal and non-lethal methods. The timing and duration of population reduction efforts will ultimately depend on weather, density and distribution of goats, and technique, but intensive reduction via helicopter-based efforts will generally occur mid-December to early March. With favorable weather and goat distribution, approximately 90% of the population could be removed in the first 1−5 years.

Post-reduction (Years 6−7). This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to monitoring and removal, which will occur year round as needed.

Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park from any direction and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

Lethal Removal

Mountain goats will be dispatched using firearms with non-lead ammunition from aerial- or ground-based efforts. If direct (use of firearms) lethal removal efforts fail or goats occur in a location that does not lend itself to direct lethal removal, mountain goats may be captured and euthanized on site. Animals will be dispatched by trained personnel following established and approved guidelines from the American Veterinary Medical Association (AVMA).

Aerial-based lethal removal will be performed by federal contractors or personnel with the appropriate training, certifications, skills, and proficiencies in aviation operations and safe use of firearms for dispatching wildlife. Aerial capture techniques will include darting or net-gunning from a helicopter. Aerially captured mountain goats will be hobbled and blindfolded, placed in a transport bag, and attached to a helicopter by a sling for transport to a processing site where they will be humanely dispatched (i.e., using euthanasia drugs or by gunshot).

Ground-based lethal removal will be done by approved personnel or qualified volunteers (see below). Ground-capture techniques may include ground darting or baiting goats to a drop net, clover trap, or snare. Those captured using ground techniques will be dispatched on site.

Initial lethal removal activities are expected to take 3−5 years, with most activity occurring within the first 1−2 years. Although weather-dependent, the initial management activities will occur in ≤3 removal periods/year between mid-December and early March when park visitation is low compared to the late spring, summer, and fall seasons. If late fall/winter missions are

unsuccessful, removals could occur at any time of year. Each management period will last ≤2 weeks. Aircraft-based operations will occur ≤25 days, which will include ≤12 days of fixed-wing monitoring, ≤3 helicopter survey days, ≤5 helicopter-based capture days, and ≤5 days of lethal removal per management period. If funding allows, up to 10 additional days (2 removal periods) of lethal removal could occur.

Lethal removals will take place where mountain goats occur within the park, but will generally be concentrated in the central portion of the range between Cascade and Snowshoe Canyons (Fig. 1 in EA), where the majority of mountain goats currently occur. Following the initial population reduction, approximately 10% of the mountain goat population may remain. Over time, as the remaining mountain goats become less numerous and more wary, removal efficiency is likely to decrease, thus slowing removal efforts.

Helicopters will be used to ferry equipment or drop off/pick up ground-based crews performing lethal removal activities: ≤10 helicopter landings/year will occur for this purpose. To increase capture efficiency and enhance safety, a fixed-wing aircraft may be used to spot remaining mountain goats and direct crews to their location. These helicopter landings and fixed-wing aircraft use are part of the ≤25 days of aircraft-based operations previously described.

Use of Qualified Volunteers

The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the “Use of Volunteers for Wildlife Management in Parks,” and Director’s Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Non-Lethal Removal (Live Capture and Translocation)

Mountain goats could be live captured within the park and translocated to suitable locations where they are native, or be transferred to accredited zoos. The NPS will coordinate live capture and transport activities occurring within the park with appropriate state wildlife agencies, including the Wyoming Game and Fish Department and involved recipients. Recipients are expected to be responsible for obtaining permits and approvals and capturing, disease testing, and transporting mountain goats from the park to suitable native locations or accredited zoos.

Mountain goats could be captured and translocated over the course of 1−5 years primarily between December and March. The number of mountain goats captured and translocated will depend on capture success and interest from outside entities. If suitable recipients for translocation are available, live capture and translocation activities will generally occur prior to when lethal removal activities commence for the season, because helicopter capture efficiency is likely to be greatest at the onset of operations, when mountain goats are naïve and likely to be in terrain where capture can be achieved safely. As removal activities continue, the remaining mountain goats would be more likely to seek areas where operations are more difficult (steep, rocky terrain), and flee from the helicopter in order to elude capture. If capture

efficiency exceeds typical effort for capturing goats (2.5 hours/goat[1]), helicopter-supported translocation operations will cease and shift to lethal removal techniques.

Live capture operations could occur wherever goats are located within the park, but will likely take place between Cascade and Snowshoe canyons. Goats may be captured via net gunning or darting from a helicopter, or from the ground using traps, nets, or snares, and/or chemical immobilization. A fixed-wing aircraft may also be used to spot goats from the air for capture. Captured mountain goats will be ferried beneath a helicopter in a transport bag to a frontcountry staging area.

In accordance with the Animal Welfare Act, NPS Management Policies, standard operating procedures, and guidance from the American Society of Mammologists, all actions involving direct handling or management of goats will be conducted humanely and in accordance with NPS-approved capture and handling protocols to ensure animal welfare and human safety are maintained. No more than four goats will be transported via helicopter during a single trip. If a mountain goat were to sustain a life-threatening injury during capture and relocation activities, it will be dispatched as quickly as possible using established and approved guidelines from the AVMA. After reaching the staging areas, mountain goats will be transported by recipients using road-based vehicles to translocation sites outside of the park.

Artificial Baits

Temporary salt baits could be placed to attract mountain goats to suitable areas for more efficient monitoring, capture, collaring, and/or removal.

Helicopters and Firearms

Helicopter and firearms use will comply with NPS firearms use policies, Interagency Helicopter Operations Guide, and the NPS Aerial Capture Eradication and Tagging of Animals Operations Plan prepared specifically for the implementation of the park's Mountain Goat Management Plan. Per NPS aviation policy, only qualified government or contract personnel will participate in aerially based operations. If available and approved by the helicopter base manager and aviation officer, helicopter operations will be based out of the Teton Interagency Helibase adjacent to the Jackson Hole Airport. Otherwise, operations will base out of the Jackson Hole Airport. Firearms will be used to humanely dispatch seriously injured mountain goats, to remove goats that may become aggressive to humans, and to lethally remove mountain goats in the park.

Carcass Disposal

Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. In situations where carcass relocation is not possible, temporary trail or area closures may be

[1] The 2.5-hour capture efficiency is based on data obtained from 2014–2016 Grand Teton National Park mountain goat capture and collaring field activities.

implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger, in accordance with applicable health guidelines and other requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

Temporary Closures

It is possible that specific areas of the park will need to be temporarily closed during mountain goat management activities if park staff determine this is necessary to ensure public safety. Closures of specific areas could last for several hours, days, or for the duration of the management activities. It is anticipated that the majority of these closures will occur in the late fall and winter months during periods of lower visitor use. Larger areas defined by canyons or drainages may be closed during management activities for ≤7 days to ensure human safety during helicopter-based removal activities. In situations where mountain goat carcasses cannot be moved but may pose a risk to park visitors, temporary area closures will be implemented. These closures (≤5 acres) will remain in place until carcasses are consumed, which could be up to 2 weeks or longer in the winter if carcasses become buried in snow and become accessible at a later date. The public will be appropriately notified in advance of these temporary closures as required under 36 CFR 1.5.

Mountain Goat Monitoring

As needed to monitor or improve the success of control efforts, monitoring activities will include fixed-wing and helicopter-based population monitoring; ground-based population surveys; and/or deployment of remote cameras at natural and artificial mineral licks. It may be necessary to temporarily capture (helicopter-based), radio-collar and/or mark with paint goats prior to releasing them for the purpose of tracking them to a more suitable location and/or time for removal.

Ground-based surveys involve using spotting scopes and binoculars from a distant observation point to scan suitable habitats for goats. These surveys will occur from May–October. Camera deployment entails attaching a camera using nylon straps to a nearby tree or rock and orienting the camera towards a natural or artificial mineral lick. Remote cameras will be checked every few weeks to change out memory cards and batteries. Helicopter-based population trend monitoring flights for mountain goats, conducted by the NPS or WGFD, could occur every 1−5 years in combination with surveys for bighorn sheep in winter. These surveys will be completed over 1−3 days per year, with 6−8 hours of flight time each day. During aerial surveys, a low-level helicopter will systematically search all mountain goat habitat in the park.

If mountain goats are captured and released, park-specific capture protocols approved by the NPS veterinarian will be followed. Upon capture, the helicopter will land close by and the mountain goat(s) will be restrained, blindfolded, and processed on site or placed in a transport bag for ferry to a frontcountry processing site. During processing, mountain goats will be placed in a sternal or left lateral recumbent position to prevent bloat. A physical exam will be conducted to check for signs of respiratory distress or capture-related injuries; baseline heart rate, respiratory rate, and rectal temperature will be established and subsequently monitored every 5−10 minutes. Goats processed at backcountry sites will be radio-collared and released on site.

The number of days needed for captures will depend on the number of goats targeted, with flight time estimated as 2.5 hours/animal captured in any season. The NPS will continue to coordinate closely with WGFD personnel on capture and monitoring of goats. Refueling and processing of mountain goats (if not taking place in the field) will occur at established frontcountry staging/refueling sites. A contract helicopter will base operations out of the Teton Interagency Helibase at the Jackson Hole Airport, if it is available. Alternatively, operations will base out of the fixed-wing base operations at the south end of the Jackson Hole Airport. Other staging/refueling areas have been identified in the park and could be used for processing/sampling captured mountain goats and refueling the helicopter.

Education and Interpretation

The NPS will continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, potential impacts of mountain goats on bighorn sheep and other park resources, and progress towards achieving mountain goat removal. The NPS will continue to solicit observation reports of bighorn sheep and mountain goats from park visitors and employees.

Wilderness Character Monitoring

Park wildlife biologists will report wilderness character monitoring measures to the park's wilderness coordinator in accordance with the park's Recommended and Potential Wilderness Building Blocks for Wilderness Stewardship. Measures reported will include authorized actions that manipulate wildlife, status of non-native animal species, non-recreational physical developments, administrative flight operations, and the number and extent of visitor behavior restrictions (area closures).

Cooperation with Land and Wildlife Managers

The NPS will work cooperatively with WGFD, Idaho Department of Fish and Game, the United States Forest Service and other adjacent stakeholders to identify possible management strategies that could be implemented outside the park to reduce the mountain goat population in the Teton Range. The aim of interagency cooperation is to limit future colonization by mountain goats and the need for additional intensive management events within the park, and to support interagency partners in taking actions outside the park.

MITIGATION MEASURES

The selected alternative incorporates the mitigation measures listed in Appendix A of this document.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Public scoping occurred November 12–December 20, 2013. A public meeting was held in Jackson on December 12, 2018. The EA was made available for public review and comment during a 30-day (total) period from December 4–20, 2018, and February 4–15, 2019. Two

hundred and two correspondences were received. Substantive comments primarily focused on mountain goat removals, bighorn sheep management, public hunting, and the use of qualified volunteers. Substantive comments are addressed in the Errata and Response to Public Comments.

National Historic Preservation Act

In accordance with section 106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (SHPO) on April 6, 2018, via telephone conversation and email correspondence. The park determined that field activities associated with the selected alternative will have “no potential to cause effect” on cultural resources if specific mitigation measures are followed (Appendix A). The SHPO concurred with the park’s determination via email response on April 9, 2018.

Endangered Species Act

In April 2017, the NPS sought input from the U.S. Fish and Wildlife Service (USFWS) regarding helicopter disturbance to raptors. The information provided was used to assess potential impacts and develop conservation measures. On June 29, 2019, the park obtained a current species list from the Information Planning and Conservation (IPaC) website. The USFWS was notified via email of a forthcoming request for informal consultation on July 8, 2019, a Biological Assessment was mailed to USFWS on July 15, 2019, and concurrence from the USFWS was received via email on July 30, 2019. Based on information from the management plan/EA, the USFWS’s understanding of the nature of the project, local conditions, and current information on federally listed species, the USFWS concurs with the park’s “may affect, not likely to adversely affect” determination for Canada lynx and grizzly bear, and “not likely to jeopardize the continued existence” determination for the North American wolverine. The USFWS also notes that the project should be re-analyzed if plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

Tribal Consultations

A scoping letter describing the preferred alternative was mailed to the park's 24 associated tribes on August 1, 2018, to solicit comments and concerns. Park leaders met with representatives of The Shoshone-Bannock Tribes of Fort Hall, Idaho on September 24, 2018, to discuss the proposed management plan. The Tribes submitted comments on the technical meeting and EA via letter on December 20, 2018. The park also received varied interest and feedback from the Assiniboine and Sioux Tribes, Blackfeet Tribe, Cheyenne and Arapaho Tribes, Coeur D’Alene Tribe, Comanche Tribe, Confederated Tribes of the Colville Reservation, Confederated Salish and Kootenai Tribes, Confederated Tribes of the Umatilla Indian Reservation, Northern Arapaho Tribe of the Wind River, and Rosebud Sioux Tribe. The park will continue to consult with interested tribes during implementation of the Mountain Goat Management Plan.

FINDING OF NO SIGNIFICANT IMPACT

Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 identify ten criteria for determining whether the selected action will have a significant impact on the human

environment. The NPS reviewed each of these criteria, given the environmental impacts described in the EA, and determined there would be no significant impacts for any of the ten criteria. This determination is part of the NEPA decision file.

The following impact topics were dismissed from full analysis in the EA and are not discussed in this FONSI: acoustic environment, air quality, archeological resources, environmental justice, ethnographic resources, federally listed wildlife species, historic structures and cultural landscapes, Indian trust resources, state listed species of greatest conservation need, visitor and employee health and safety, visitor use and experience, and wildlife (excluding bighorn sheep) and migratory birds.

There will be no significant impacts on public health, public safety, or unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects or elements of precedence were identified. Implementation of the NPS selected alternative will not violate any federal, state, or local environmental protection law.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on bighorn sheep, vegetation and soils (including whitebark pine), and wilderness character; however, no potential for significant adverse impacts was identified.

Bighorn Sheep

Implementing the selected alternative may cause short-term (several minutes to hours) disruptions of normal bighorn sheep behaviors and increased stress during mountain goat monitoring, capture and translocations, and lethal removal activities. Conservation measures aimed at minimizing disturbance impacts to the bighorn sheep population will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

Reducing the goat population is expected to benefit bighorn sheep by eliminating a major population-level threat and effectively minimizing the risk of pathogen transmission (and subsequent risk of a disease outbreak) and competition for forage and other resources between bighorn sheep and mountain goats. Beneficial impacts are expected to be long-term (10-20 years).

When the adverse and beneficial effects of selected alternative are combined with the effects of past, present, and reasonably foreseeable future actions, the total cumulative impact on bighorn sheep remains adverse. Because there are other stressors facing the Teton Range bighorn sheep herd not addressed by this plan, the benefit expected from implementing the selected alternative will not significantly change the overall cumulative adverse impact on bighorn sheep.

Vegetation and Soils

The removal of mountain goats will reduce adverse impacts on soils and native plant communities in the alpine and subalpine zones. Herbivory, wallowing, and soil compaction will be decreased. Backcountry work may lead to some impact on soils and vegetation where

mountain goats are present as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover). As mountain goats and their impacts are diminished, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

When the effects of the selected alternative are combined with other past, present, and foreseeable future impacts, the total cumulative impact on vegetation and soils will be adverse, then gradually beneficial as goats are removed. The incremental beneficial impacts of the alternative will contribute substantially to the impacts on high elevation vegetation and soils (7,500 to 11,000 feet in elevation) that are already occurring. The incremental impacts of the selected alternative will contribute slightly to, but not substantially to the impacts on lower elevation vegetation and soils (frontcountry staging areas/helispots) that are already occurring.

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then steadily decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. It’s anticipated these flight operations will occur ≤ 25 days per year, with ≤ 10 landings annually. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there will be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses. These carcasses will likely be used as a food source by native animals. It is anticipated that the number of carcasses will be reduced if translocation operations are successful. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures may affect a visitor's solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced, resulting in a long-term benefit on wilderness character.

The increment contributed by the direct and indirect impacts will result in no change in the cumulative impacts for the untrammeled quality of wilderness because the NPS is currently baiting, capturing, and collaring mountain goats for monitoring purposes (NPS 2015a). The increment contributed by the direct and indirect impacts will have a substantial cumulative beneficial effect on the natural quality of wilderness because mountain goats will be removed from wilderness. The increment contributed by the direct and indirect impacts of increasing authorized administrative flight operations up to 50 per year over the 2015 baseline of 47 operations will have a noticeable cumulative adverse effect on the undeveloped quality of wilderness during the first one to five years. The increment contributed by the direct and indirect impacts of the additional administrative flight operations and related field activities that involve

human created noise will have similar short-term and long-term adverse cumulative effects on the solitude or primitive and unconfined recreation as those described for the undeveloped quality of wilderness. Potential temporary area closures will have a noticeable cumulative effect on solitude or primitive and unconfined recreation. However, due to the long-term benefits to wilderness character as a whole (collectively the wilderness qualities described above), the selected alternative will substantially change cumulative effects for the better.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2) (c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

APPENDIX A: MITIGATION MEASURES

The following mitigation measures will be implemented to minimize the degree and/or extent of adverse impacts.

ACOUSTIC ENVIRONMENT

- When possible, select/contract aircraft with quieter technology, for example, fixed-wing aircraft having propellers with slower tip speed, e.g., propellers with 3 or more blades, and quiet technology helicopters.
- Use direct routes, avoiding sensitive sites to and from launch and staging areas.
- Minimize low level flight when practicable. When flying to and from the work area, aircraft will maintain a minimum 2,000 foot altitude where possible, per Federal Aviation Administration (FAA) Advisory Circular 91-36D Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas (FAA 2004).
- Brief pilots on the value of natural soundscapes and ask for their compliance and suggestions about noise mitigation. Helicopter pilots will be encouraged to take the FAA Fly Neighborly training at https://go.usa.gov/xQPCW
- Use firearm silencers, when feasible, during lethal removal efforts to mitigate soundscape impacts.
- Avoid prolonged aircraft and road vehicle idling at staging areas.
- Minimize conducting activities during temperature inversion periods when noise propagation can affect ground points at greater distances, and noise can be louder.

CULTURAL RESOURCES

- All staff and other persons involved in mountain goat management will be informed of the procedures to follow in the event of archeological and ethnographic resource discovery, as well as the penalties for illegally collecting artifacts, or intentionally damaging archeological resources and/or historic properties.
- Backcountry/wilderness helicopter landing sites will occur on snow covered areas away from the edges of snow patches or snow fields to avoid any unevaluated, sensitive cultural sites that may exist at the receding snowline.
- Coordinates for any known backcountry cultural sites within areas where goat management activities will occur will be supplied to helicopter pilots to ensure landings do not occur at sensitive sites.
- Coordinates for backcountry helicopter landing sites occurring in snow-free locations will be provided to the cultural resources program manager for record keeping purposes and to pursue archeological surveys of the areas, as warranted, post-project.
- In the unlikely event that human remains are discovered during project activities, park law enforcement rangers, the park superintendent, and the park and regional archeologists will be contacted immediately. All provisions outlined in the Native American Graves Protection and Repatriation Act will be followed.
- If previously unknown archeological (human-modified) resources and/or human remains are discovered during monitoring or management activities, all work in the immediate vicinity (approx. 600 feet) of the discovery shall be halted until the resources are identified and documented and an appropriate mitigation strategy developed. The park cultural resource specialist will be contacted for any questions or discoveries. The same measures will be followed for paleontological (fossils) and other non-cultural related resources.

QUALIFIED VOLUNTEER PROGRAM

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2 individuals, but not to exceed 6 volunteers/week in backcountry.
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place).

SOILS

- Field activities will minimize disturbances on steep slopes and bare mineral soil.

VEGETATION

- Equipment and boots will be cleaned and free of soil, plant material, and seeds prior to all operations to prevent the accidental spread of non-native species.
- Location information on backcountry work areas (e.g., bait and capture sites) will be recorded and maintained as part of the record of actions taken; this will ensure that proper revegetation, if necessary, is completed.
- Backcountry work areas will be minimal in size and short-term in nature to reduce vegetation impacts of staging.

VISITOR USE AND EXPERIENCE

- As much as possible, field activities in backcountry and wilderness areas will occur during periods of minimal visitation, and will avoid trails, overlooks, backcountry camping zones, and climbing routes.
- Signs, alerts, bulletins, press releases, and notifications will be issued to inform visitors of temporary area closures and other management activities.

WILDERNESS CHARACTER

- Bait lures, traps, cameras, and other installations will be removed at the end of each field season. Located animal collars that no longer serve as tracking devices will be retrieved when practicable.
- Aerial- and ground-based field activities in wilderness areas will occur during periods of minimal visitation and will avoid trails, overlooks, backcountry camping zones, and climbing routes when visitors are likely present. Park staff will examine the proposed location, timing, and duration of each temporary area closure and consider ways to modify the closure to minimize effects on visitors.
- Field activities will avoid subsurface ground disturbance and known archeological (human-modified) and paleontological (fossils) resources.

WILDLIFE

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to relevant park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored as needed and appropriate measures (e.g., removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Helicopter-based management activities will avoid sensitive bighorn sheep lambing areas during the lambing season (late May−June).
- Helicopter-based removal of mountain goats will be permitted within important bighorn sheep winter habitat only under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon, when bighorn sheep are less likely to be bedded and ruminating.
- When active golden eagle territories occur within the area of operation from January 15–July 31, a ½-mile flight buffer will be established around the active nest.
- When active peregrine falcon territories occur within the area of operation from March 1–August 15, a ½-mile flight buffer will be established around the active nest.
- Personnel involved in helicopter-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
- A disturbance free buffer of 1 km around known grizzly bear dens will be implemented to minimize disturbance to denning grizzly bears.

- All activities will comply with the Superintendent's Compendium regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Additionally, equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
    - At all times in all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.
    - All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.
    - All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately. All bear sightings must be reported to the park's Bear Management Office in ≤24 hours.

APPENDIX B: ERRATA AND RESPONSES TO SUBSTANTIVE COMMENTS

Part 1: Errata

The revisions to the park's Mountain Goat Management Plan Environmental Assessment (EA) provided below do not change the impacts analysis that is contained in the EA.

The following text replaces the existing carcass disposal description in the **Elements Common to All Alternatives** section (page 20):

5. **Carcass Disposal:** Mountain goat carcasses will generally be left on the landscape to provide biological and ecological benefits. They will be relocated away from high-use system trails, campsites, or where visible from visitor use areas, if accessible. If necessary, carcasses will be moved by ground personnel, who will drag or carry carcasses ≥100 yards away from these areas, or, if conditions allow, carcasses will be relocated or removed using a helicopter. Transportation of carcasses will be done within the helicopter, or via a short-haul line and transport bag or cargo net. However, in situations where carcass relocation is not possible, temporary trail or area closures may be implemented to reduce the potential for conflicts with wildlife feeding on carcasses, such as grizzly or black bears.

   If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The following management framework descriptions in the **Elements Common to the Action Alternatives (B and C)** (page 21) has been revised for clarification:

1. ***Post-reduction (Years 6−7).*** This will occur when the total number of mountain goats has been substantially reduced (≥90%), but small groups or individuals remain. These remaining animals often become more difficult to detect, monitor, and manage; some may learn to avoid locations repeatedly visited by staff. With approximately 10% of the population expected to remain after population reduction, efforts will transition to tactical monitoring and removal, which will occur year round when needed.

   Maintenance (Year 7 and beyond, as long as mountain goats are present). The goal will be to prevent immigration of mountain goats into the park, and to remove any that do so. It is uncertain how often dispersing goats would enter the park after initial removal efforts are completed. Some strategic monitoring methods will continue. Removal efforts will likely be ground-based and tactical.

The following section is added to the end of the **Elements Common to the Action Alternatives (B and C)** section of the plan/EA to describe the use of qualified volunteers (page 22):

4. **Qualified Volunteers:** The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

Several scientific names were incorrectly spelled on pages 39 – 41 of the plan/EA. Correct spellings are provided below:

Alpine vegetation – *Poa alpina*
Sub-alpine mixed conifer forest – *Juniperus communis*, *Hedysarum occidentale*, and *Vi*
Sub-alpine herbaceous – *Leucopoa kingii*, *Mertensia ciliate*, *Lomatium ambiguum*, and *Phacelia hastate*
Montane herbaceous meadows – *Geranium viscosissimum*, *Balsamorhiza sagittata*, and *Carex hoodia*
Montane mixed-conifer forest – *Eucephalus engelmannii*

The following statement in the **Vegetation and Soils, Affected Environment, Sub-alpine herbaceous** section (page 4) is revised by removing a reference to "tall forbs:"

> Common species in these communities include western aster (*Symphyotrichum ascendens*), subalpine fleabane (*Erigeron peregrinus*), sulphur Indian paintbrush (*Castilleja sulphurea*), and fireweed (*Epilobium* sp).

The following statement in the **Vegetation and Soils, Environmental Consequences, Alternative A – No Action, Direct and Indirect Impacts** (page 43) is revised by removing references to photosynthesis and plant growth:

> This condition removes native vascular and non-vascular plant material resulting in an open area available for colonization by other plant species, native or nonnative.

The wilderness character impact analysis for Alternative C has been revised to better clarify direct and indirect impacts on wilderness character from using non-lethal removal methods.

The original text located on page 49 of the EA is replaced with the text provided below:

Alternative C – Combination of Lethal and Non-Lethal Removal

Direct and Indirect Impacts

Under this alternative, field activities that involve the lethal and non-lethal removal of mountain goats would likely begin at a higher intensity level and then steadily decrease as the goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats would continue for a period of ≤20 years. Alternative C would have a negative effect on the **untrammeled** quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This alternative would have a negative effect on the **undeveloped** quality of wilderness due to ≤50 administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. These direct and indirect impacts for ≤20 years are due to the existence of lures and tracking devices in wilderness. This alternative would have a positive effect on the **natural quality of wilderness** because exotic mountain goats would be removed from wilderness. However, due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the presence of mountain goat carcasses. These carcasses may likely be utilized as a food source by native animals. It is anticipated that the number of carcasses would be reduced if translocation operations are successful. This alternative would have a negative effect on the **solitude or primitive and unconfined recreation quality of wilderness** because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures would affect a visitor's solitude and/or primitive recreational use and experience.

Under Alternative C, wilderness character (collectively the wilderness qualities described above) would be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities occur. However, this impact on wilderness character would diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

The following reference was omitted from the EA and is added to **Chapter 5: References**:

Stafl, N. and M. I. O'Connor.
2015 American pikas' (*Ochotona princeps*) foraging response to hikers and sensitivity to heat in an alpine environment. Arctic, Antarctic, and Alpine Research 47: 519-527.

Part 2: Responses to Substantive Comments

PURPOSE AND NEED FOR ACTION

Nativity and evidence for need to cull mountain goats

Comment 1: Several commenters stated that the draft plan/EA does not clearly demonstrate that mountain goats are not native to the Teton Range. One commenter cited a mountain goat observation in *Campfires in the Canadian Rockies* by W. T. Hornaday (1906) as evidence that mountain goats occurred and were native to the Teton Range. Others noted that mountain goats have naturally migrated to the Tetons.

Response 1: It is well documented that mountain goats were translocated to the Snake River Range, an area where they were not native, by the state of Idaho in the late 1960s/early 1970s (Hayden 1984, Hayden 1989). The state of Wyoming also recognizes that mountain goats are not native to this region (McWhirter and Roop 2007). Descendants of this introduced mountain goat population likely colonized the Teton Range giving rise to the present day population (GRTE unpublished data). The fact that mountain goats dispersed from the Snake River Range to the Teton Range on their own does not make them native. Recent genetic work suggests that the most likely source of mountain goats in the Tetons is the Snake River population of mountain goats.

The observation of a mountain goat in the Teton Range in the Hornaday book is attributed to naturalist W. H. Wright in 1892, not Hornaday himself. Park staff was unable to locate the original publication cited by Hornaday and therefore cannot verify this observation. Of the three accounts of mountain goats in the GYE in the late 1800s, all appeared to be mistaken identifications of bighorn sheep (Schullery and Whittlesey 2001). Thus, the large amount of historical material examined provides no convincing evidence of either individual mountain goats or a population of mountain goats existing in the GYE before 1882 (Laundre 1990, Schullery and Whittlesey 2001, Whittlesey et al. 2018).

Comment 2: Multiple commenters stated that the mountain goat management plan/EA does not sufficiently demonstrate that mountain goats are harming bighorn sheep, therefore there is no justifiable reason to eradicate the mountain goats.

Response 2: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and *the non-native species interferes with, disrupts, or damages park resources*. The policy also explicitly calls for superintendents to “evaluate the species’ current or potential impact on park resources.” As stated in the management plan/EA, mountain goats present a potential threat to the Teton Range bighorn sheep population from transmission of pathogens that could result in disease and competition for forage or other resources, especially on limited winter ranges. This is one of the smallest and most isolated sheep herds in Wyoming, which has also experienced an apparent population decline. Coupled with the increase in mountain goat population and possibility of 250–400 mountain goats (DeVoe et al. 2015) eventually occupying the Teton Range if not controlled, NPS policy is clear on management of this non-native species.

HISTORY AND STATUS OF MOUNTAIN GOATS

Disease status of mountain goats

Comment 3: Several commenters requested additional information about the pathogen/disease status of mountain goats and a better explanation of why mountain goats are a risk to bighorn sheep. Commenters also inquired about the evidence that bighorn sheep and mountain goats can contract pathogens (disease) from one another, with one noting that the NPS assertion that bighorn sheep were potentially at risk of pathogen transmission from mountain goats was not supported by the scientific literature.

Response 3: Pneumonia in members of the subfamily Caprinae (which includes bighorn sheep and mountain goats) involves multiple bacterial species (Besser et al. 2013), with a specific pathogen (*Mycoplasma ovipneumoniae*: *M. ovi*) that may initiate or predispose animals to a suite of respiratory pathogens (Besser et al. 2008). Mountain goats do host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). In particular, both bighorn sheep and mountain goats can become infected with *M. ovi* (Besser et al. 2008, Wolff et al. 2019), which is not part of the naturally occurring bacterial load in either wild ungulate but can cause pneumonia in mountain goats and bighorns, and could be one of the respiratory pathogens transmitted among these species (Wolff et al. 2019). Both bighorn sheep and mountain goats that reside in the Teton Range have been tested for *M. ovi* as well as several other pathogens that can contribute to pneumonia.

The disease status of mountain goats captured in the park (2014–2018) was provided on page 4 of the EA and is detailed in the table below. To date, there are no indications of pneumonia in Teton Range mountain goats, however, testing did find two pathogens (*B. trehalosi* and *Manheimia* spp.) that can contribute to pneumonia in bighorn sheep. Unfortunately, mountain goats residing in the Snake River Range (the putative source of mountain goats in the Teton Range) have tested positive for all the pathogens associated with pneumonia. Of particular concern, *M. ovi* was detected in 6 of 7 animals sampled in 2013 and all of the *Pasteurellacae* bacteria (Lowrey et al. 2018). Given the likely connection between the Snake River and Teton populations of mountain goats, it is conceivable, and possibly even likely, that goats in the Tetons could become carriers of *M. ovi* in the near future, thereby increasing the risk of transmitting this pathogen to bighorn sheep.

Year	Number Tested	Lkt+[1] B. trehalosi[2]	M. haemolytica[3]	Lkt+ M. spp.[4]	P. multocida[5]	M. ovi[6]
2014	5	2/5 (40%)	0/5 (0%)	0/5 (0%)	0/5 (0%)	0/5 (0%)
2015	4	2/4 (50%)	0/4 (0%)	0/4 (0%)	0/4 (0%)	0/4 (0%)
2017	5	0/5 (0%)	0/5 (0%)	1/5 (20%)	0/5 (0%)	0/5 (0%)
2018	1	0/1 (0%)	0/1 (0%)	1/1 (100%)	0/1 (0%)	0/1 (0%)
Total	15	4/15 (27%)	0/15 (0%)	2/15 (13%)	0/15 (0%)	0/15 (0%)

[1]leukotoxigenic; [2]*Biberstenia trehalosi*; [3]*Manheimia haemolytica;* [4]*Manheimia species;* [5]*Pastuerella; multocida;* [6]*Mycoplasma ovipneumoniae*

Comment 4: Several commenters inquired about the risk of disease/pathogen transmission from mountain goat carcasses left on the landscape.

Response 4: Transmission of the pathogens typically involved in respiratory disease or pneumonia in bighorn sheep and mountain goats is generally via direct contact and/or aerosolized droplets (Dixon et al. 2002, Besser et al. 2014). These pathogens do not survive well in the environment outside the host (Carter et al. 1995) because conditions in the outside environment are not favorable (e.g., temperatures much cooler than within the host). It is unlikely that pathogens would survive >24 hours once the host is killed (T. Besser pers. comm. 7/18/2019).

Comment 5: One commenter suggested that mountain goats may have been translocated with pathogens. Another offered that removing mountain goats would not reduce/eliminate the risk of disease transmission because the two species have already interacted.

Response 5: Because there are no records of disease surveillance from the original translocation of mountain goats to the Snake River Range and Big Hole mountains of Idaho there is no way to know their disease status when introduced. While it is possible that respiratory pathogens could have been present in the translocated mountain goats, the fact that the population successfully established and went on to expand in numbers and distribution in a relatively short time frame, suggests that they may not have been transplanted with a lethal pathogen community. However, mountain goats in the Snake River Range *currently* have the suite of pathogens that cause pneumonia in bighorn sheep, and goats in the Teton Range have tested positive for some of these pathogens, while bighorn sheep currently have not tested positive for these pathogens (see response 3). Thus the evidence supports that removal of goats in the Teton Range should reduce the risk of transmission of pathogens to bighorn sheep.

Comment 6: The Wyoming Department of Agriculture suggested that the NPS has made erroneous assumptions about mountain goat range, overlap with domestic sheep, and pathogen transmission.

Response 6: As described in the management plan/EA, mountain goat distribution is based on empirical evidence on goat locations, which includes relocations from GPS-collared animals and observations. The only assumption made for mountain goat distribution is locational accuracy. Mountain goats in the Snake River and Teton Ranges (Lowrey et al. 2018) have tested positive for the bacteria associated with bighorn sheep pneumonia (*Bibersteinia trehalosi*, *Mannheimia* spp., *Mycoplasma ovipneumoniae*, and *Mannheimia haemolytica*) that collectively pose a high risk of disease to bighorn sheep (see response 3). Transmission of pathogens between species is viewed as a legitimate risk where the two species overlap (Wolff et al. 2016). Mountain goats and bighorn sheep overlap spatially and temporally in portions of the Teton Range and have been observed <100 yards from each other on survey flights.

Mountain goat population analysis

Comment 7: One commenter inquired about whether increases in mountain goat numbers were primarily due to immigration or local breeding. This individual went on to note that the mechanism of population increase could impact effectiveness of mountain goat control within the park.

Response 7: Although the mechanism of population growth is unknown, biologists suspect that population growth of mountain goats is due to reproduction in the Teton Range. Immigration, however, was an obviously important factor in colonization of the Teton Range, and will also be a contributing factor in the need to continue management of goats in the Teton Range in perpetuity (as stated in the management plan/EA). Genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations, suggesting that migration between the two populations is likely low. To address the immigration issue, in part, the WGFD has liberalized mountain goat hunting season west of the park (Hunt Area 4); the quota for this unit is 48 goats of any age or sex. This increased harvest should reduce the population of goats that may immigrate into the park.

Mountain goat movements/dispersal

Comment 8: One commenter noted that the plan/EA provided contradictory information about home ranges of mountain goats generally being fixed (page 5) and subsequent references to observations of dispersing mountain goats in the Teton Range.

Response 8: The statements referring to mountain goats as generally having fixed home ranges, but also exhibiting dispersal are correct. Dispersal from natal home ranges (the home range a mountain goat was born into and used with its mother for the first year of life) is common in mountain goats (Festa-Bianchet and Cote 2008, Stevens 1983, Varley 1996). However, once independent subadult mountain goats have established their own home range they typically show high fidelity to the area. In other words, a mountain goat's home range is generally fixed once established. Dispersers tend to be younger animals, generally ranging from 1–3 years old (Stevens 1983, Festa-Bianchet and Cote 2008) with males more likely to disperse than females (Hutchins and Stevens 1981, Johnson 1983). Williams (1999) observed dispersal of mountain goats to new topographic areas when source populations were high. Varley (1996) and Stevens (1983) found that colonization of new habitats by mountain goats was related to connectivity of goat habitat.

ISSUES AND IMPACT TOPICS DISMISSED

Federally listed wildlife species

Comment 9: One commenter was concerned that the potential impacts to wolverine resulting from removal actions were understated.

Response 9: Wolverines are currently proposed for protection under the Endangered Species Act (ESA). A Biological Assessment fully analyzing the impacts to endangered, threatened, and proposed species, such as wolverine, was completed and submitted to the USFWS for consultation. Page 24 of the plan/EA provides specific conservation measures to reduce potential impacts to wolverine. Although there is potential for negative disturbance impacts, implementation of the conservation measures should minimize that possibility. The presence of mountain goat carcasses on the landscape resulting from lethal removal activities could have a beneficial effect on wolverines if they are found and consumed.

Effects of aircraft on visitor experience

Comment 10: One commenter expressed concerns about the effects of low flying aircraft on the visitor experience and requested that this topic be addressed through the planning process.

Response 10: Pages 14 (Visitor Use and Experience) and 46–50 (Wilderness Character) of the plan/EA adequately addressed potential impacts on visitor experience from utilizing aircraft to monitor and remove mountain goats from the park. Specific mitigation measures are provided on page 23 of the plan/EA to reduce or avoid potential impacts on visitor experience.

ALTERNATIVES

Alternative A – No Action

Comment 11: Several commenters suggested that the mountain goats should be allowed to remain in the Teton Range and offered the perspective that their presence here is not any different than other nearby federal lands from which they came.

Response 11: Section 4.4.4.2 of NPS Management Policies (NPS 2006) explicitly calls for the removal of exotic (non-native) species already present, up to and including eradication if control is prudent and feasible, and the exotic species interferes with natural processes and the perpetuation of natural features, native species or natural habitats. The Need for the Proposal section of the EA (pages 1–3) provides a rationale for why mountain goats must be removed from the park.

Alternative C – Combination of Lethal and Non-Lethal Removal (Preferred)

Transfer of mountain goats to zoos

Comment 12: Several commenters were opposed to placing mountain goats in zoos as part of translocation efforts.

Response 12: Transfer of mountain goats to zoos would only be considered under very specific conditions. During translocation efforts, the capture and transport of family groups (adult females accompanied by young of the year) would occur when possible. Since previous relocation efforts of mountain goats (Myatt et al. 2010, Olson et al. 2010) found low survival rates for goats orphaned during translocation, the NPS would consider placing orphaned offspring in an accredited zoo facility instead of translocating and releasing them without a mother.

Mountain goat translocations

Comment 13: Multiple individuals commented on mountain goat transplant locations. Some recommended that mountain goats be translocated to specific geographic areas, including areas where mountain goats are not native. One commenter also noted that they did not see a need to translocate mountain goats to locations where they are native. Others requested that the NPS provide more details on the locations where mountain goats may be translocated.

Response 13: The NPS will carefully evaluate options for translocating mountain goats from the Teton Range. As stated in the EA, in order to ensure similar problems/issues with mountain

goats are not created or magnified elsewhere, areas/regions where goats are native and/or do not overlap with bighorn sheep populations will be given priority. The NPS will work closely with agencies and entities on all potential translocation activities.

Comment 14: One commenter requested additional information on the type of facilities necessary to hold and process goats prior to translocation and a better description of the whole translocation process.

Response 14: Translocations will be closely modeled after recent efforts in Olympic National Park (2018–19), as they have translocated hundreds of mountain goats. No holding or processing facilities are anticipated; as noted on page 17 of the EA, captured mountain goats will be transported by helicopter to frontcountry staging areas, where they will be transferred to approved land-based transport. Time at processing locations will be dependent on requirements of the receiving agency/entity and/or state(s) that are to receive the animals (e.g., disease testing). As stated in the EA, throughout capture, handling, and translocation, animals will receive the highest standards of care as required by federal and state laws and policies.

Prioritize mountain goat removal locations

Comment 15: The WGFD suggested that the NPS prioritize locations for mountain goat removal using a process similar to the way the WGFD address the removal of bighorn sheep that wander into areas where there is known, suspected, or likely contact with domestic sheep and goats.

Response 15: Aerial, and ground-based removals as well as translocations are complex operations that are largely dependent on timing, weather, and animal locations to be successful. The objective of lethal removal is to safely and humanely remove as many mountain goats as quickly as possible. This objective is within NPS policy, while quickly reducing competitive interactions and the risk of pathogen transmissions between mountain goats and sheep. As stated in the EA, efforts are expected to focus on the Cascade-Snowshoe Canyon areas.

Timing of removal actions

Comment 16: One commenter raised an issue related to bighorn sheep vulnerability during the winter months when the majority of mountain goat removal activities would occur.

Response 16: The environmental analysis in Chapter 3 of the plan/EA describes in detail the direct, indirect, and cumulative impacts on the park's bighorn sheep population from conducting mountain goat removal activities during the winter months. Chapter 2 of the plan/EA provides conservation measures, including specific conditions to avoid and protect important bighorn sheep winter habitat when utilizing helicopter-based management activities.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES (B and C)

Carcass disposal

Comment 17: Commenters expressed concerns about leaving mountain goat carcasses on the landscape following lethal removal operations. Several individuals thought that leaving carcasses would violate Wyoming Statute 23-3-107, which prohibits wanton destruction of big game. Multiple commenters were also opposed to leaving mountain goat carcasses on the

ground and offered alternatives to doing so including: using pelts/skulls for educational purposes and donating meat to Native American Tribes or the public.

Response 17: The EA sufficiently addressed the environmental impacts of leaving mountain goat carcasses within the backcountry and wilderness areas of the park. The NPS has modified the preferred alternative to include the potential donation and distribution of mountain goat meat under the "Selected Alternative and Rationale for the Decision" section of the FONSI. If lethally removed mountain goats are able to be transported from park wilderness and backcountry areas, the meat from these carcasses could be donated and distributed to Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger in accordance with the requirements of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909).

The potential authorized removal of mountain goat carcasses for the purposes of donating and distributing meat could reduce the number of carcasses left in the park. The ability to donate mountain goat meat will depend on (1) interest from Indian Tribes, qualified volunteers, food banks, and other organizations that work to address hunger to accept the donated meat; (2) the success of eradicating individual mountain goats; and (3) the conditions present to successfully transport the carcass from the park's wilderness/backcountry area to a frontcountry staging area.

WS 23-3-107 is intended to preclude waste of animals subject to legal harvest managed by the WGFD. In general, hunting-related statutes such as this do not apply within the park.

Education

Comment 18: One commenter recommended the park develop a program to educate the public about the mountain goat situation.

Response 18: As provided on page 20 the plan/EA, the NPS would continue to provide educational and interpretive information to the public about mountain goat and bighorn sheep population status and ecology, and the potential impacts of mountain goats on bighorn sheep and other park resources.

Coordination

Comment 19: Several commenters inquired if the NPS had coordinated with WGFD on the proposal or suggested that coordination with the Idaho Department of Fish and Game (IDFG) and WGFD was needed. One commenter was interested in the status of the mountain goat population in the Snake River Range and how the populations are managed (i.e., for increasing numbers). This commenter was also interested in whether mountain goats were continuing to disperse and, if so, if efforts could be made to reduce dispersal or reduce herd sizes to limit dispersal.

Response 19: The NPS has coordinated with and discussed the proposal with both WGFD and IDFG personnel and coordination with these agencies continues. Specifically, the NPS sent letters to both agencies during the scoping process and both were supportive of the park initiating an EA. The WGFD also provided comments on the draft plan/EA (see Comments/Responses 15, 24, 26). The WGFD agreed that the expansion and proliferation of mountain goat poses a risk to the Teton Range bighorn sheep. While they were generally supportive of removing mountain goats from the Teton Range, they suggested several

modifications to the preferred alternative including the use of skilled volunteers to remove mountain goats in conjunction with capture and translocation, and prioritize removals in locations where mountain goats and bighorn sheep overlap (See Comments/Responses 15 and 26). The use of qualified (skilled) volunteers has been incorporated into the selected alternative. The NPS will consider focusing the removal of mountain goats in areas where they overlap with bighorn sheep during the implementation of the management plan.

The state wildlife management agencies publish annual reports detailing the status and management of big game species. Links to the most recent state mountain goat reports can be found at 2017 WY Job Completion Report and 2017 ID Statewide Mountain Goat Report.

Preliminary results from a recent genetic analysis did not detect recent gene flow between the Snake River and Teton Range mountain goat populations. This suggests that dispersal events may be infrequent. In regard to current management of mountain goats outside park boundaries in western Wyoming, please see response 7.

Maintenance

Comment 20: Several commenters asked about plans to address mountain goats in the long-term.

Response 20: Based on current estimates of mountain goat numbers, significantly reducing or eliminating the population is achievable in 1–5 years. If lethal and non-lethal removal is effective, it could be 5–30 years before mountain goats disperse to the Teton Range again. The actual time frame of dispersal would depend on where goats are dispersing from, the current management framework in place, and population trends at those locations outside the park. NPS management activities to remove individual goats that enter the park during this period would likely be infrequent and of short duration (1−2 days) and involve removal of mountain goats by park staff, other federal personnel, and/or contractors as needed.

CONSERVATION MEASURES

Comment 21: One commenter questioned why the NPS was not proposing to use silencers all the time to minimize impacts to the acoustic environment.

Response 21: One of the acoustic environment conservation measures in the plan/EA included the use of firearm silencers, as possible, during lethal removal efforts to mitigate soundscape impacts (page 22). There may be certain situations when expedience or safety of personnel would outweigh the benefits of using silencers (e.g., opportunistic removals when personnel are not equipped with silencers or when the sounds of gunshots are necessary to ensure the safety of individuals and groups participating in mountain goat removal activities).

Comment 22: The Wyoming Department of Agriculture stated they were unaware of “specific conservation measures” the NPS has implemented to benefit bighorn sheep.

Response 22: The sentence referenced by this commenter occurs on page 37 of the mountain goat management plan/EA and states “given implementation of specific conservation measures for bighorn sheep adverse impacts to individuals from management actions are expected to be minimal…” The conservation measures this sentence refers to are found on pages 22–25 in the

mountain goat management plan/EA. The following, taken from page 24 of the mountain goat management plan/EA, are specific to bighorn sheep:

- Helicopter-based management activities would avoid sensitive bighorn sheep lambing areas during the lambing season (May–June).
- Helicopter-based removal of mountain goats would be permitted within important bighorn sheep habitat ONLY under the following conditions:
    - Only one sub-segment (north or south) of bighorn sheep population is exposed to extended helicopter activity in any given year;
    - No more than ⅓ of important bighorn sheep wintering areas used by a sub-segment is exposed to helicopter activities in any given year; and
    - When feasible, removal actions in important bighorn sheep wintering areas would occur during the early morning or late afternoon when bighorn sheep are less likely to be bedded and ruminating.

ALTERNATIVES CONSIDERED BUT DISMISSED

Public hunting in the park

Comment 23: Many commenters, including WGFD, suggested the use of hunters to manage the mountain goat population in the park. Specific suggestions included:

- Deputize rangers similar to the Grand Teton National Park elk reduction program where the State of Wyoming issues a hunting license or
- Amend the park's enabling legislation, which provides for a controlled reduction of elk, when necessary, to meet management objectives, to allow for hunting of mountain goats in the park.

Response 23: During the preparation of the draft plan/EA the NPS considered but dismissed an alternative that would use hunting as a tool to manage mountain goats in the park. The reasons for the dismissal can be found on page 28 of the plan/EA. Amending the park's enabling legislation requires Congressional action. Additionally, ground-based removals per se are not the most expedient or efficient means of removing goats, and they would need to be conducted annually into the foreseeable future.

Comment 24: The WGFD requested that the NPS provide a summary of situations in the NPS where hunters are used to manage overabundant wildlife in other NPS units and clarify the statutory authority that allows the elk reduction program in GRTE.

Response 24: Outside of Alaska, national parks are generally closed to hunting. In accordance with specific management plans, qualified volunteers supervised by NPS staff have been used to remove elk at Theodore Roosevelt, Rocky Mountain, and Wind Cave National Parks and feral goats from Hawai'i Volcanoes National Park (Demarais et al. 2012). Olympic National Park (NPS 2018) and Grand Canyon National Park (NPS 2017) have proposed the use of skilled public volunteers to assist with removal of mountain goats and bison, respectively. A controlled reduction of elk within Grand Teton National Park by licensed hunters deputized as rangers is allowed for, when necessary for proper management of the elk herd, by the park's enabling legislation (Public Law 81-787, 64 STAT 849).

Fertility control

Comment 25: Several commenters requested that the NPS consider the use of fertility control, including surgical sterilization (spay/neuter) of mountain goats.

Response 25: The use of fertility control as a mountain goat management tool was considered but dismissed on page 28 of the plan/EA. In short, fertility control would not be effective due to the difficulty in accessing animals and the fact that there is no approved chemical contraception available for mountain goats. Surgical sterilization would require live capture and subsequent surgery on mountain goats which would be cost prohibitive and challenging due to low capture success rates. Additionally, goats would remain on the landscape and continue to impact other park resources (e.g., native vegetation).

Use of Skilled Volunteers

Comment 26: Several comments, including those provided by the WGFD, recommended the preferred alternative be modified to include the use of skilled volunteers to remove mountain goats.

Response 26: The NPS has reconsidered the dismissal of the use of skilled (qualified) volunteers to remove mountain goats. The selected action described in this FONSI has been modified. The NPS will develop a qualified volunteer program to assist in the rapid lethal removal of mountain goats from the park. The program will follow requirements provided in the John D. Dingell, Jr. Conservation, Management, and Recreation Act (54 USC 104909), the July 31, 2019 NPS memorandum on the "Use of Volunteers for Wildlife Management in Parks," and Director's Order #7: Volunteers-In-Parks. Once a program is developed, use of qualified volunteers will be limited to ground-based field efforts to safely locate and lethally dispatch goats.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: BIGHORN SHEEP

Bighorn sheep decline

Comment 27: Multiple commenters offered their thoughts and insights on potential reasons for the decline of the sheep herd that were not related to mountain goats; including predation or predator activity influencing movements/distribution, high lamb mortality, disease due to domestic sheep, habitat loss, impediments to movements, human activity on summer and winter ranges, lack of breeding between the northern and southern subpopulations, and climate change.

Response 27: The mountain goat management plan/EA (beginning on page 29) reviews the current status and issues facing Teton Range bighorn sheep. Commenters are correct in their assessments that the Teton sheep face multiple environmental stressors. The Teton Range bighorn sheep working group is actively working to investigate and address many of these issues. In particular, the group is currently examining the genetic status of Teton Range bighorn sheep and evaluating several new population estimation techniques. Previously, winter range protections for bighorn sheep were implemented within the park and the working groups continues to engage with the public on ways to protect wintering bighorn sheep.

Comment 28: Some comments questioned whether the removal of mountain goats would successfully stop or reduce the decline of the Teton Range bighorn sheep population. Others suggested that the Teton Range bighorn sheep may go extinct regardless of actions taken to address the mountain goats.

Response 28: As stated in response 2 and restated here: NPS Management Policies (NPS 2006) explicitly calls for management of non-native species, up to and including eradication, if control is prudent and feasible and the non-native species interferes with, disrupts, or damages park resources. Additionally, the Organic Act (1916) and its amendments, directs the NPS to manage park lands in a manner that would not degrade park values, which is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations. As stated in response 27, there are multiple stressors on this sheep population, of which mountain goats are an important and manageable one that is not native to the Teton Range.

Comment 29: Multiple commenters reported that they have observed bighorn sheep and mountain goats coexisting without any ill effects suggesting that mountain goats are not a concern. Others noted that bighorn sheep populations are struggling where mountain goats are not present and therefore mountain goats could not be an issue.

Response 29: Anecdotal observations of bighorn sheep overlapping with mountain goats and their apparent coexistence is confounded by whether or not the goat population is native or introduced. Both species do indeed coexist in some areas where they have evolved together over long periods of time (e.g., Glacier National Park in Montana); in such areas, competitive overlap is limited by each species' partitioning of habitats (niche separation). However, in locations where mountain goats have been introduced, such as Colorado, bighorn sheep populations may cede habitat to mountain goats primarily due to competitive interactions (Adams et al. 1982, Gross 2001). Additionally, non-native mountain goat populations typically fare better than native goat populations (as observed in Montana: Smith and DeCesare 2017), with potential implications to native bighorn sheep populations that overlap with non-native mountain goat populations that are stable or expanding (Gross 2001).

It is accurate that some bighorn sheep populations have declined or are struggling in locations where their distribution does not overlap with mountain goats. However, suggesting that this means that mountain goats could not be factor in declines or struggling populations assumes that the problems affecting bighorn sheep are the same everywhere, which is not the case. A variety of factors can contribute to declines or prevent populations from fully recovering and each set of factors will be unique to the population. In the case of the Teton Range bighorn sheep, biologists agree that the presence of mountain goats is a potential threat to the bighorn sheep population. Mountain goats are known to host respiratory pathogens that are of concern to bighorn sheep (Lowrey et al. 2018) and these pathogens can be transmitted among mountain goats and bighorn sheep (Blanchong et al. 2018, Wolff et al. 2016, Wolff et al. 2019). The mountain goats that reside in the Snake River Range from which the mountain goats in the Teton Range are most likely descended have tested positive for all of the pathogens involved in pneumonia in bighorn sheep. Consequently, there is a risk that additional mountain goat individuals could disperse to the Teton Range bringing these pathogens with them. A growing and expanding mountain goat population may also compete with bighorn sheep, particularly in limited winter ranges.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: VEGETATION AND SOILS

Comment 30: One commenter provided correction-related input on errors to scientific plant names and plant species descriptions, wildlife consumption of native high-elevation plants, impacts of mountain goat wallowing on soils, and effects on soils and plants from the use of salt baits.

Response 30: Several scientific plant names were incorrectly spelled on pages 39 – 41 of the plan/EA. The correct spellings to these scientific names, an updated statement regarding plant descriptions in the sub-alpine herbaceous section are provided in the Errata. These changes do not affect the environmental analysis in the EA.

The commenter pointed out a different interpretation of the effects of mountain goats and bighorn sheep on native vegetation; while both mountain goats and bighorn sheep would forage on high-elevation native plants the pattern of use of mountain goats and their higher fecundity is likely to have a greater impact on native plants than the effects of a healthy population of bighorn sheep.

Impacts from the use of salt baits on vegetation and soils was not specifically described and analyzed in the EA because these devices would be placed in specific small denuded areas during the snow-free seasons to attract mountain goats primarily during the first one to two years of removal activities. Due to limited placement of these devices, any impacts to vegetation and soils in these specific areas would not be discernible.

Mountain goats wallow in particularly sensitive soils - high elevation, very shallow, readily disturbed with a short growing season; therefore, colonization is slow. The mountain goats are also known to use the same winter sites for many years so repeated disturbance damages soils.

AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES: WILDERNESS CHARACTER

Impacts to Jedediah Smith Wilderness

Comment 31: One commenter was concerned about impacts to the Jedediah Smith Wilderness on the west side of the Tetons.

Response 31: Mountain goat removal and other management actions described in the plan/EA would be limited to wilderness and non-wilderness areas within Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway. No management actions would occur outside of these areas.

NEW ALTERNATIVES OR ALTERNATIVE ELEMENTS

Comprehensive plan for conserving bighorn sheep

Comment 32: Several commenters suggested that the mountain goat management plan/EA lacked a comprehensive vision for addressing the multiple concerns facing bighorn sheep. Some of these commenters suggested that the NPS include specific management actions to

protect bighorn sheep in the management plan/EA. Some suggestions included winter closures, off trail restrictions, and acquiring low elevation winter range.

Response 32: The plan/EA is intended to address the current situation of an expanding and growing population of non-native mountain goats within the park before the situation becomes untenable. Accordingly, the NPS opted to propose the rapid removal of mountain goats because a limited time remains before it may be difficult or impossible to effectively remove the goat population from the park. In addition to mountain goat removal, the NPS will continue to work closely with federal and state land and wildlife management agencies, non-governmental organizations, and others on a variety of potential management actions and measures to ensure the continued conservation of the park's bighorn sheep population. The Teton Range bighorn sheep working group is actively addressing many of the other threats facing Teton Range bighorn sheep.

Bighorn sheep vaccinations

Comment 33: One commenter suggested the NPS should invest in developing a vaccine against pathogens involved in pneumonia.

Response 33: Currently there is no effective vaccine against pneumonia for bighorn sheep. Vaccine development is very expensive and unless wildlife disease threatens humans or livestock there is little available funding. Pneumonia in bighorn sheep involves multiple bacterial species (Besser et al. 2013), with evidence suggesting that *M. ovi* may initiate or predispose animals to polymicrobial pneumonia infections (Besser et al. 2008). While an effective vaccine for *M. ovi* may be helpful in addressing pneumonia in bighorn sheep, it would not provide protection against the Pasteurella pathogens and evidence suggests that immunity to *M. ovi* is strain specific (Cassirer et al. 2016) which means developing a single vaccine effective against all strains would be extremely difficult. Once an effective vaccine is developed, which can take many years due to testing and regulatory approval, a suitable delivery method must be identified. Because bighorn sheep live in remote, mountainous areas where access is challenging, the logistics of vaccine delivery will be difficult and perhaps infeasible. Often times multiple doses of a vaccine are needed to induce the immune response, adding more time and expense. Given that vaccine development can take many years, is costly, and has challenges related to delivery, it is not a cost-effective option to address the mountain goat issue. In addition, this approach would leave mountain goats on the landscape and therefore would not address the other concerns with their presence, including impacts to wilderness character or potential for competition with bighorn sheep and potential impacts to vegetation (see response 35).

Bighorn sheep relocation

Comment 34: One commenter asked why the NPS is not considering translocating bighorn sheep to areas where they have historically done well, and leave the mountain goats in the park.

Response 34: Bighorn sheep are a native component of the park. Relocating bighorn sheep from the Teton Range but leaving the mountain goats in place would not meet the mission of the NPS, which is to *preserve and protect the natural resources, processes, systems, and values… in an unimpaired condition to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them*, NPS Management Policies on the removal of non-native species (see comment and response 2), or the purpose and need of the

plan/EA. Also, bighorn sheep translocation would require considerable additional effort to identify recipient agencies and locations, and sheep translocations present considerable risk to the animals.

Leave a small mountain goat population in place

Comment 35: Several commenters suggested that the NPS should leave a small mountain goat population in place.

Response 35: Leaving a small population of mountain goats in the park would not meet the intent of the NPS Organic Act (16 USC 1–4) and NPS Management Policies on the removal of non-native species (see comment and response 2) or the purpose and need of the plan/EA. If allowed to remain in the park, mountain goats would continue to negatively affect park resources and values, including bighorn sheep and wilderness character.

Hunting outside of the park

Comment 36: Several commenters had suggestions related to hunting outside the park including the elimination of the once-in-a-lifetime rule that currently exists for mountain goat licenses in Wyoming.

Response 36: Outside the boundaries of the park, the WGFD is responsible for the management of mountain goats. The NPS does not have the authority to manage mountain goats through hunting or other means outside of the park. However, the park has and continues to cooperate with the WFGD as they consider management options specific to the west side of the Tetons. In 2019, the WGFD made several changes related to mountain goat hunting in northwest Wyoming, including:

- Designating a new hunt area (HA 4) on the west side of the Teton Range outside of the park;
- Issuing a new Type A license for any mountain goat. The Type A license is not restricted to once-in-a lifetime; and
- Offering 48 Type A licenses in HA 4 (August 15–November 15).

Mountain goat management outside of the park

Comment 37: One commenter noted that it was shortsighted for the NPS to limit removal efforts to the park and suggested that resource managers should take a broader approach to management of mountain goats, including removing them from the Snake River Range and Palisades so that recolonization and the need for recurring control efforts is eliminated.

Response 37: The NPS does not have management authority outside of park boundaries. However, the land (USFS–Caribou-Targhee National Forest and Bridger-Teton National Forest) and wildlife (WGFD, IDFG) management agencies who do have management authority in the Snake River Range are well aware of the concerns and issues related to the presence of mountain goats in the Tetons. In particular, WGFD recognizes the need to manage mountain goats in the Teton Range to conserve bighorn sheep as demonstrated by their management approach to mountain goats outside park boundaries in western Wyoming (Hunt Area 4; please see response 7 for further details). The NPS continues to work very closely with our agency partners in the conservation and management of bighorn sheep and their habitat in the Teton Range.

OTHER TOPICS

Other mountain goat populations

Comment 38: One commenter voiced their opposition to killing the Gros Ventre herd of mountain goats.

Response 38: The proposed plan addresses the population of mountain goats that resides in the Teton Range within the park. The Teton Range is separated from the Gros Ventre Mountains by the Jackson Hole valley. Any goats residing there are managed by the WFGD. The plan/EA does not propose any actions to address mountain goats in this area.

Bureau of Land Management/US Forest Service risk of contact model

Comment 39: The Wyoming Department of Agriculture stated that they did not support the use of the Risk of Contact Tool (ROC; US Forest Service/US Bureau of Land Management 2015) to guide management decisions for bighorn sheep. The Department also expressed concern that NPS is attempting to manage wildlife outside the boundaries of the park and suggested that the NPS should reference the Statewide Bighorn Sheep/Domestic Sheep Working Group Plan.

Response 39: The ROC Tool is a geospatial platform developed and used by the US Forest Service and Bureau of Land Management personnel to assess the probability and rates of contact between bighorn sheep and active domestic sheep allotments (US Forest Service/US Bureau of Land Management 2015). The NPS did not use this model to evaluate potential impacts from the three alternatives or establish probabilities or rates of contact between mountain goats and bighorn sheep. The confusion may stem from the use of similar wording (i.e., risk of contact) to disclose potential impacts of a growing and expanding mountain goat population in the park and potential dispersal of additional mountain goats from the Snake River Range, but the NPS did not intend to imply that the ROC Tool was used. At the population level, all pathogens, including *M. ovi*, which can lead to pneumonia in bighorn sheep, have been detected in goats residing in the Snake River Range. If goats continue to disperse to the Tetons and enter the park, this is a potential avenue by which the Teton sheep could become infected with pathogens to which they may be immunologically naive.

There are no actions identified in the mountain goat management plan/EA that would occur outside of the park boundary. The state of Wyoming is responsible for the management of mountain goats in the Teton Range outside of the park, and Wyoming and the State of Idaho are responsible for the management of mountain goats in the Snake River Range. The park has and will continue to coordinate with both state wildlife management agencies.

Although the 2004 Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group Final Report was provided as a general bighorn sheep reference on page 30 of the park's Mountain Goat Management Plan/EA, the final report was not extensively referenced because the plan/EA did not propose any specific actions related to the interaction of bighorn sheep and domestic sheep.

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Appendix C: NON-IMPAIRMENT DETERMINATION

Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway Mountain Goat Management Plan

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service (NPS) to manage units "to conserve the scenery, natural and historic objects, and wildlife in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wildlife in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance OIPS 2005, Section 1.4.5).

Fundamental resources and values for Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway (collectively the park) are identified in the enabling legislation and the 2017 Foundation Document. Based on a review of these documents, the fundamental resources and values comprise the park’s scenery, geologic features and processes, ecological communities and natural process, aquatic resources and processes, cultural history and resources, visitor experiences in an outstanding natural environment, and natural soundscapes and night skies. Other important resources and values comprise the park’s recommended, potential, and eligible wilderness; other historic properties; and park museum and archive collection.

Resources that were carried forward for detailed analysis in the environmental assessment (EA) and are considered necessary to fulfill specific purposes identified in the enabling legislation of the park, are key to the natural or cultural integrity of the park, and/or are identified as a goal in relevant NPS planning documents include bighorn sheep, vegetation and soils, and wilderness character. Accordingly, this non-impairment determination has been prepared for each of these resources.

Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act.

Bighorn Sheep

Under the selected alternative, reduction and ultimate elimination of the non-native mountain goat population is expected to be beneficial to the bighorn sheep population in the long-term due to reduced risk of competition and pathogen transmission between bighorn sheep and mountain goats. During the first few years of active management, the selected alternative will include live capture and translocation of mountain goats as well as lethal removal. Live capture and translocation requires more time per individual and is more costly than lethal removal. Consequently, the time to achieve a 90−100% reduction in the mountain goat population is likely to require the full time identified for the reduction phase (5 years). This means that risks to bighorn sheep from the presence of mountain goats will continue to exist until all mountain goats are removed. Beneficial impacts are expected to be long-term (10−20 years).

Helicopter overflights, landings, and firearm use could interrupt normal activity patterns of bighorn sheep (i.e., resting, feeding, traveling, ruminating, etc.). When disturbed a bighorn sheep could increase its vigilance, flee, and/or stop eating or ruminating. Overflights of bighorn sheep habitat could cause individual sheep below or in close proximity to become alert. Given the limited current spatial overlap between wintering bighorn sheep and mountain goats, bighorn sheep are not expected to be exposed to much direct overflight. Nevertheless, helicopter noise may still be audible from a distance, and sheep could be more alert while those sounds are audible (~5–30 minutes). However, in locations where the two species co-occur in winter, it is likely that bighorn sheep will flee if a helicopter makes a direct or close approach. Because relatively few mountain goats currently winter in areas used by bighorn sheep, such disturbance impacts are expected to be limited to the time it takes to remove those individuals (several minutes to several hours). Conservation measures aimed at minimizing disturbance impacts to bighorn sheep at the population scale will be implemented (see Appendix A). Minimizing disturbance impacts to bighorn sheep from aircraft based management activities through conservation measures will reduce the potential for negative behavioral responses (e.g. increased movements and energy expenditure, reduced energy intake, habitat shifts/abandonment, etc.) that could negatively affect reproduction and survival. While overflights of bighorn sheep habitat or removal actions (including landings) within bighorn sheep habitat could impact individual bighorn sheep as described above, these actions are not expected to have effects at the population level.

In the short-term (several months annually over approx. 5 years), the selected alternative will result in numerous carcasses on the landscape, which could result in temporary increases in predators and scavenger activity for the time carcasses are present. Although numerous carcasses on the landscape could affect the risk of predation on bighorn sheep, such a response is not anticipated. In mid-winter, the wolverine is the species most likely to be present

in the high elevations where mountain goats occur. Wolverines are territorial, occur at low densities, and have relatively large home ranges. If wolverines find and cache carcasses for later use, individuals may benefit through improved condition and higher survival or higher reproductive success. This is unlikely to translate into higher predation risk for bighorn sheep because instances of wolverines successfully preying on large ungulates such as bighorn sheep are uncommon. Given implementation of specific conservation measures for bighorn sheep, adverse impacts to individual bighorn sheep from management actions are expected to be minimal and population-level impacts are not anticipated.

Vegetation and Soils

Under the selected alternative, the impacts of non-native mountain goat herbivory, trampling, bedding, and wallowing is expected to decrease incrementally as the population of mountain goats in the park decreases. This will improve overall and long-term ecosystem function as native plant growth and regeneration proceed naturally, though not as rapidly when utilizing only lethal removal techniques. Similarly, as mountain goats and their impacts are diminished with incremental removal, whitebark pine and krummholz habitats will receive less adverse impacts with fewer and eventually no mountain goats trampling and wallowing within these habitats.

Backcountry work areas may lead to some impact on soils and vegetation as non-lethal removal may require more activity on the ground to process goats, however this impact will be short-term (1–3 years to allow for impacted vegetation to recover).

Wilderness Character

Under the selected alternative, field activities will likely begin at a higher intensity level and then decrease as the mountain goat population within wilderness is substantially reduced. Nevertheless, field activities to remove goats could continue for a period of ≤20 years. The selected alternative will have a negative effect on the untrammeled quality of wilderness due to the continuation of luring and live capturing mountain goats and carcass disposal. This selected alternative will have a negative effect on the undeveloped quality of wilderness due to 50 or more administrative flight operations per year for lethal removal and translocation activities, monitoring, the use of small installations to lure and capture mountain goats, and the placement of collars and/or other tracking devices. It’s anticipated these flight operations will occur ≤ 25 days per year, with ≤ 10 landings annually. The selected alternative will have a positive effect on the natural quality of wilderness because non-native mountain goats will be removed from wilderness. Due to lethal removal activities, there would be a short-term (during scavenging and decomposition) negative effect on the natural quality due to the increased presence of mountain goat carcasses from lethal removal activities. These carcasses will likely be utilized as a food source by native animals. The selected alternative will have a negative effect on the solitude or primitive and unconfined recreation quality of wilderness because the occurrence of helicopter flight operations, other field activities, and potential short-term area closures could affect a visitor's opportunity for solitude and/or primitive recreational use and experience.

Under the selected alternative, wilderness character will be mostly affected during the fall and winter months during the first one to five years when the majority of mountain goat removal and monitoring activities. This impact on wilderness character will diminish as the mountain goat population is removed or greatly reduced resulting in a long-term benefit on wilderness character.

Conclusion

In conclusion, based on the preceding analysis and in consideration of the park's purpose and significance, it is the Superintendent's professional judgment that park resources will continue to be present for enjoyment by current and future generations. Therefore, implementation of the selected alternative will not constitute an impairment of the resources and values of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway.

MOGO.pdf

From:	Wilson, Margaret
To:	Steve Butler
Subject:	MOGO
Date:	Friday, November 22, 2019 3:43:46 PM
Attachments:	WY19I0359_GTNP_mountaingoatmgmt_LSS_Final.pdf FINAL MOGO plan BA 7.9.2019.docx

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
334 Parsley Boulevard
Cheyenne, Wyoming 82007

In Reply Refer To:
06E13000-2019-I-0359

Memorandum

To: Superintendent, National Park Service, Grand Teton National Park, Moose, Wyoming

From: *for* Field Supervisor, U.S. Fish and Wildlife Service, Wyoming Field Office, Cheyenne, Wyoming

Subject: Mountain Goat Management Project

Thank you for your correspondence sent and received in our office on July 9, 2019, regarding the proposed Mountain Goat Management Project (Project). This Project will use a combination of lethal and non-lethal actions to remove mountain goats from the Grand Teton National Park (Park). The Project will be conducted for a minimum of five years. During the first few years of active management, implementation will be divided between translocation and lethal removal of mountain goats. Due to the steep, inaccessible terrain where mountain goats reside, a significant portion of the removal work will involve aviation operations. This will include aircraft-based operations that will occur for less than or equal to 40 days, including less than or equal to 17 days of fixed-wing monitoring or capture support, less than or equal to 3 helicopter survey days, less than or equal to 5 helicopter-based capture days, less than or equal to 5 days of helicopter-based lethal removal, and less than or equal to 10 days of live capture for translocation. If funding allows, less than or equal to 10 additional days (2 removal periods) of lethal removal could occur. Ground-based lethal removals of mountain goats will include federal staff (i.e., Park staff, USDA Wildlife Services staff), other approved and qualified government employees or contract personnel, or skilled public volunteers. This Project will occur within Grand Teton National Park, Teton County, Wyoming.

All of these activities will take place during daylight hours. Park food storage regulations will be monitored and enforced. All Project personnel will be required to attend a bear safety briefing provided by qualified park staff. To prevent environmental contamination, only lead-free ammunition will be used. Helicopter pursuits for the purpose of live capture will occur only in terrain where mountain goats may be safely netted/darted and recovered. If a wolverine or grizzly bear is observed, pilots will be instructed to remain greater than or equal to 500 feet above ground level from the animal with no circling or direct approach. If helicopter activities

take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period, an appropriate disturbance-free buffer will be established around actual and potential den sites.

We are writing in response to your inquiry related to species listed under the Endangered Species Act (ESA; 16 U.S.C. 1531 *et seq*.). We have indicated the response we believe best meets your request using the checkboxes below.

☐ You requested a list of endangered, threatened, proposed, and/or candidate species, and designated or proposed critical habitat that may occur in the area of your Project. In an effort to expedite information sharing, we created an Information, Planning, and Conservation System (IPAC), available on-line at http://ecos.fws.gov/ipac/. IPAC can be used to identify any potential federally listed species or critical habitat in your Project area by using the "Initial Project Scoping" tool. For species identified by IPAC, you should review the recommendations and measures at http://www.fws.gov/wyominges/species_endangered.php.

☒ Based on information from your request, our understanding of the nature of the project, local conditions, and current information on federally listed species:

- ☐ We have not identified any issues relative to species or critical habitat listed under the ESA.
- ☒ The ESA does not require the U.S. Fish and Wildlife Service to concur with "no effect" determinations; however, we appreciate receiving the information used to support your conclusion.
- ☒ We concur with your "may affect, not likely to adversely affect" determination for federally listed species and designated critical habitat.
- ☒ Your Project should be re-analyzed if Project plans change, if new information on the distribution of listed or proposed species or critical habitat becomes available, or if new information reveals effects to listed or proposed species or critical habitat not previously considered.

We appreciate your efforts to conserve endangered, threatened, and candidate species. If you have any questions regarding this memo or your responsibilities under the ESA or other authorities, please contact Lisa Solberg Schwab of my office at the letterhead address or phone (307) 367-5340.

cc: GTNP, Wildlife Biologist, Moose, WY (S. Dewey) (sarah_dewey@nps.gov)
WGFD, Statewide Nongame Bird and Mammal Program Supervisor, Lander, WY (Z. Walker) (zack.walker@wyo.gov)
WGFD, Statewide Habitat Protection Program, Cheyenne, WY (wgfd.hpp@wyo.gov)

FINAL MOGO plan BA 7.9.2019_1.pdf

MOUNTAIN GOAT MANAGEMENT PLAN
BIOLOGICAL ASSESSMENT

Grand Teton National Park and the John D. Rockefeller, Jr. Memorial Parkway
July 2019

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1.0 Introduction

The Endangered Species Act (ESA) of 1973 (PL 93-205, as amended) requires federal agencies to ensure that any activities they authorize, fund, or carry out do not jeopardize the continued existence of any wildlife species federally listed, or proposed for listing, as threatened or endangered (Section 7). This document addresses all threatened, endangered, or proposed (TEP) terrestrial wildlife, vascular plant, and fish species identified by the U.S. Fish and Wildlife Service (USFWS) as potentially occurring within Grand Teton National Park or the John D. Rockefeller, Jr. Memorial Parkway (hereafter referred to as the park or GRTE-JODR). This biological assessment is the analytical basis for determining the level of impact or environmental consequence for wildlife and wildlife habitat, including threatened and endangered species, in the EA.

1.1 Purpose of this Biological Assessment

This Biological Assessment (BA) analyzes the potential effects of implementing one of three alternatives to manage nonnative mountain goats within the park on TEP and critical habitat, pursuant to Section 7 of the Endangered Species Act of 1973 (16 U. S. C. 1531-1544), as amended. Federally listed threatened and endangered species and critical habitat meeting the following criteria are considered in this assessment:

1. Known to occur in the park based on confirmed sightings;
2. May occur in the park based on known range or unconfirmed sightings;
3. Potential habitat for the species occurs within the park; or
4. Potential effects may occur to these species.

1.2 Current Management Direction

Current management direction for TEP species can be found in the following documents:

- Endangered Species Act of 1973, as amended
- 1916 Organic Act
- National Park Service (NPS) General Authorities Act
- NPS Management Policies 2006
- Migratory Bird Treaty Act

2.0 Consultation History

The park obtained a current species listed (dated June 29, 2019) from the Information Planning and Conservation (IPac) website. In addition, in April 2017 NPS wildlife biologist, Sarah Dewey, sought input from USFWS biologist Lisa Solberg-Schwab regarding helicopter disturbance to raptors. The information provided was used to develop conservation measures and assess potential impacts.

3.0 Proposed Management Action and Alternatives Considered

The NPS is evaluating three alternative strategies for managing mountain goats within the park. These include a no action alternative, where there would be no change to current management, and two action alternatives that evaluate different removal techniques (lethal only and a combination of lethal and non-lethal). This BA analyses the potential impacts of Alternative C, the preferred alternative, which would use a combination of lethal and non-lethal techniques to remove mountain goats from the park. A full

description of Alternative C can be found in the Environmental Assessment (EA) beginning on page 17. In short, Alternative C would implement active population management of exotic mountain goats, using a combination of lethal and non-lethal actions to remove the goats from the park. During the first few years of active management, actions would be divided between live capture and translocation and lethal removal of mountain goats. The management options for lethal removal are the same as those described under alternative B. Aircraft-based operations would occur ≤40 days, including ≤17 days of fixed-wing monitoring or capture support, ≤3 helicopter survey days, ≤5 helicopter-based capture days, ≤5 days of helicopter-based lethal removal, and ≤10 days of live capture for translocation (Table 1). If funding allows, ≤10 additional days (2 removal periods) of lethal removal could occur.

In response to comments received on the EA, the NPS has re-considered an element of Alternative C that would include the use of skilled public volunteers to assist with lethal removal action. The following paragraph can replace paragraph 2 under item 3 of the **Elements Common to the Action Alternatives (B and C)** heading on page 22 of the EA.

> Given the steep, inaccessible terrain where mountain goats reside it is likely that a significant portion of the removal work would involve aviation operations, although some work may occur from the ground. Ground-based removals may be necessary to complete removal of mountain goats, and these efforts could include federal staff (i.e., NPS staff, Wildlife Services staff), other approved and qualified government employees or contract personnel, or skilled public volunteers.

In addition the following updated description of the use of skilled public volunteers can be inserted after the above paragraph.

> Management of ungulate populations has become a challenge in many national park units and recently some units have used public volunteers to assist with lethal removal operations (Powers et al. 2016). NPS staff would develop a process to recruit and select volunteers and a program to integrate volunteers into the lethal removal process. The details of both the recruitment process and the structure of a program using volunteers are still yet to be developed, however, the credentials of participants would include:
>
> - Clear criminal record with no fish/wildlife associated violations
> - Sufficient physical fitness to carry heavy pack in variable terrain
> - Demonstrated experience hunting ungulates in mountainous terrain
> - Demonstrated experience with backcountry travel and navigation
> - State-issued hunter safety certification or its equivalent
>
> Selected participants would need to meet the following requirements:
>
> - Attend 1-day in-park training/orientation on:
> - Safety: travel/hunting in high country/bear country, communications, essential equipment, use of bear spray, emergency response
> - Animal identification: age and sex of mountain goats, and sheep versus goats
> - Sample collection
> - Interfacing with other users
> - Pass test of 1) marksmanship and 2) ability to identify age, sex, and species of target versus non-target native animals.

3.1 Conservation Measures to Reduce or Avoid Potential Impacts

The following conservation measures specific to TEP species will be implemented (see EA page 22 for a complete list of Conservation Measures):

Wildlife

- To prevent environmental contamination, only lead-free ammunition will be used.
- Helicopter pursuits for the purpose of live capture would occur only in terrain where mountain goats may be safely netted/darted and recovered.
- The location of mountain goat carcasses will be recorded and passed on to park staff at the end of each day. Based on this information, appropriate trail or area closures will be identified and implemented, as necessary, or carcasses will be moved/removed to minimize the potential for conflicts.
- The decomposition status of mountain goat carcasses will be monitored throughout the season and appropriate measures (e.g. removal, demolition, area closure, etc.) will be taken to reduce the potential for conflicts with any scavengers or carnivores feeding on carcasses.
- Personnel involved in helicopter- and ground-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines and grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine or grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine or grizzly bear denning habitat during the sensitive denning period (grizzly bear: November-April, wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If an actual or potential den location is found or suspected either through aerial survey or collar data, an appropriate disturbance-free buffer will be established around the den. Focal helicopter activities, such as those associated with aerial removal of mountain goats, will occur between mid-December and mid-February to specifically reduce potential impacts to denning grizzly bears.
- All activities will comply with the park's Superintendent's Compendium (2019 and as updated) regulations related to food storage and recommended best management practices for living and working in bear country. For the purpose of the food storage regulation, the word "food" includes the following: all food (regardless of packaging), all beverages (including alcoholic beverages), lawfully taken fish or wildlife, garbage, stock feed (processed feed and grains, etc.), and pet food. Equipment used to cook or store food includes the following: cooking utensils, pots/pans/plates, stoves, grills, empty or full coolers, storage containers with food or that had previously contained food (except approved bear-resistant containers), beverage containers, and pet food bowls. Water stored in its original packaging is excluded from the following restrictions.
    - In all locations, including the backcountry, all staff (NPS, Volunteers-in-Parks, contractors, etc.) will ensure that all bear attractants are attended at all times. All unattended attractants must be stored securely inside a building, a bear-resistant food storage locker (if available), in a hard-sided vehicle with doors locked and

windows closed, or in an Interagency Grizzly Bear Committee (IGBC)-approved portable bear-resistant food storage canister; or disposed of properly in a bear-resistant garbage receptacle. Backpacks and/or daypacks containing unsecured attractants (i.e., not in a canister) must not be left unattended.

- All project personnel must attend a briefing on proper food/attractant storage and bear safety presented by a qualified member of the park's bear management team or their designee. The park's Bear Management Office (307-739-3673) will be contacted ≥2 weeks prior to the desired start date to schedule a briefing.
- All human-bear conflicts must be reported to Teton Interagency Dispatch Center immediately (307-739-3301). All bear sightings must be reported to the park's Bear Management Office (307-739-3673) in ≤24 hours.

- See also conservation measures listed below under *Acoustic Environment* in EA.

Skilled Volunteer Program

- Volunteers will carry and have bear spray (≥7.9 oz) readily available on their person.
- Volunteers will attend a safety training and participate in bear spray deployment simulation.
- Volunteers will work in teams of ≥2individuals, but not to exceed 6 volunteers/week in backcountry (Table 1).
- Volunteers will report the location of all mountain goat kills within 12 hours, noting carcass disposition (i.e. removed or left in place)
- Volunteers will ensure carcass or gut piles are >100 yards from trails, campsites, camping zones, cabins, etc. If this is not practical, skilled volunteers will report the location of any remains to NPS so a temporary closure can be implemented.

Table 1. Summary of actions in Alternative C.

Action	Element	Purpose	Operational Window	Target[1]	Duration (days)	Frequency
Monitoring	Telemetry/observation fixed-wing flights	Monitor distribution, movement, demographics, and abundance, and support live-capture operations	Year-round	None	Monitoring/capture support: ≤12 flight days total; support for translocations: ≤5	As needed to support capture or monitoring efforts
	Camera traps	Population estimate	Year-round	None	Year-round in some locations; May-Oct. in others	Annually
	Helicopter survey	Population estimate	Dec-Mar	None	1-3 flight days	Annually with bighorn sheep survey
	Ground surveys	Population estimate	May-Oct	None	≤2 weeks	Annually
Live capture	Capture, radio collar, and release	Aid monitoring/disease testing	Nov-Mar	5-10 goats	2-5 days	As needed to facilitate management and monitoring and as funding allows
	Translocation	Population reduction	Nov-Feb or at other times of year as necessary	≤25% of existing population	5-10 days	Consider annually during population reduction when interest warrants and funding allows
Lethal Removal	Nuisance individuals	Reduce safety threat	Year-round	Targeted individual(s)	≤1 flight day/individual	As needed
	Aerial removal	Population reduction	Dec-Feb[2] or other times of year as necessary	75%	Alt B and C: ≤5 flight days per management period, but weather dependent	Annually during population reduction
	Live capture and euthanize/ dispatch	Population reduction	Year-round	TBD	TBD	As needed

Table 1. Summary of actions in Alternative C.

Action	Element	Purpose	Operational Window	Target[1]	Duration (days)	Frequency
	Ground removal	Population reduction	Year-round by park staff or contractors	≤ 10% over duration of plan	Up to several days per goat	Consider annually during population reduction; as needed in perpetuity at low levels
	Skilled Volunteers	Population Reduction	Oct-Nov 2020 (additional efforts if needed)		Up to several days per goat	≤6 weeks at ≤6 volunteers/week
Other Actions	Hazing	Reduce safety threat	Year-round	Targeted individual(s)	Several hours to several days	As needed in perpetuity
	Information/ Education/ Outreach	Reduce safety threat from rogue goat; inform public about mountain goat plan/management actions	Year-round	Affected publics	Duration of project	As needed but likely limited
	Area closures	Carcass management; reduce safety threat from rogue goats; human safety near active staging and management areas	Year-round	None	During lethal and non-lethal removal activities	As needed

[1]Target is defined as desired outcome.
[2]Timing of aerial removal was modified from EA as Conservation Measure to reduce potential impacts to grizzly bears.

4.0 Project Area Description

The project area is located within GRTE-JODR in Teton County in northwest Wyoming (Figure 1). The Teton Range rises from the Jackson Hole valley floor at approximately 6,500 feet to a high of 13,770 feet atop the Grand Teton. Vegetation communities vary across an elevational gradient (Knight et al. 2014) and include the elevation band of 7,500-11,000 feet throughout much of GRTE-JODR, which includes over 80% of the plant taxa within this elevation range. The GRTE 2002–2005 Vegetation Mapping Project Final Report (Cogan et al. 2005) and its appendices describe a total of 167 plant associations, while the accompanying map is divided more coarsely into 35 vegetation types, 24 of which occur in the project area. These vegetation zones and types are described by the following:

- **Alpine vegetation** – True alpine vegetation communities occur in the park above 9,000 feet and

are at least sparsely vegetated. These areas are intermixed with numerous non-vegetated cliffs and rock faces, boulder fields, and snowfields.

- **Treeline vegetation** – Treeline vegetation (9,500-10,000 feet) is characterized by a mosaic of alpine vegetation and/or sub-alpine vegetation, and krummholz trees. These "trees" generally reach 3-4 feet in height with the occasional emergent trunk reaching higher. High wind, low temperatures and moisture, and poor soil development characterize the treeline and alpine areas. Dominant tree species include Englemann spruce (*Picea engelmanii*), subalpine fir (*Abies lasiocarpa*), and whitebark pine (*Pinus albicaulus*).
- **Sub-alpine mixed conifer forest** – Sub-alpine forests are prevalent (7,000-9,500 feet). These forests can be dominated by one or several tree species, which include lodgepole pine (*Pinus contorta*), Engelmann spruce, subalpine fir, and white bark pine.
- **Sub-alpine and montane shrubland** – Montane and sub-alpine shrublands (7,000-9,000 feet) are generally located on slopes and in drainages. Species co-occur in both the montane and subalpine zones.

5.0 Pre-field Review

A species list from the IPaC website (dated 6/29/2019) with all federally listed and candidate species within GRTE-JODR in Teton County Wyoming was reviewed for this analysis (Table 2). Species not known or with no potential to occur in the analysis area were dismissed from further consideration in this document (Table 2).

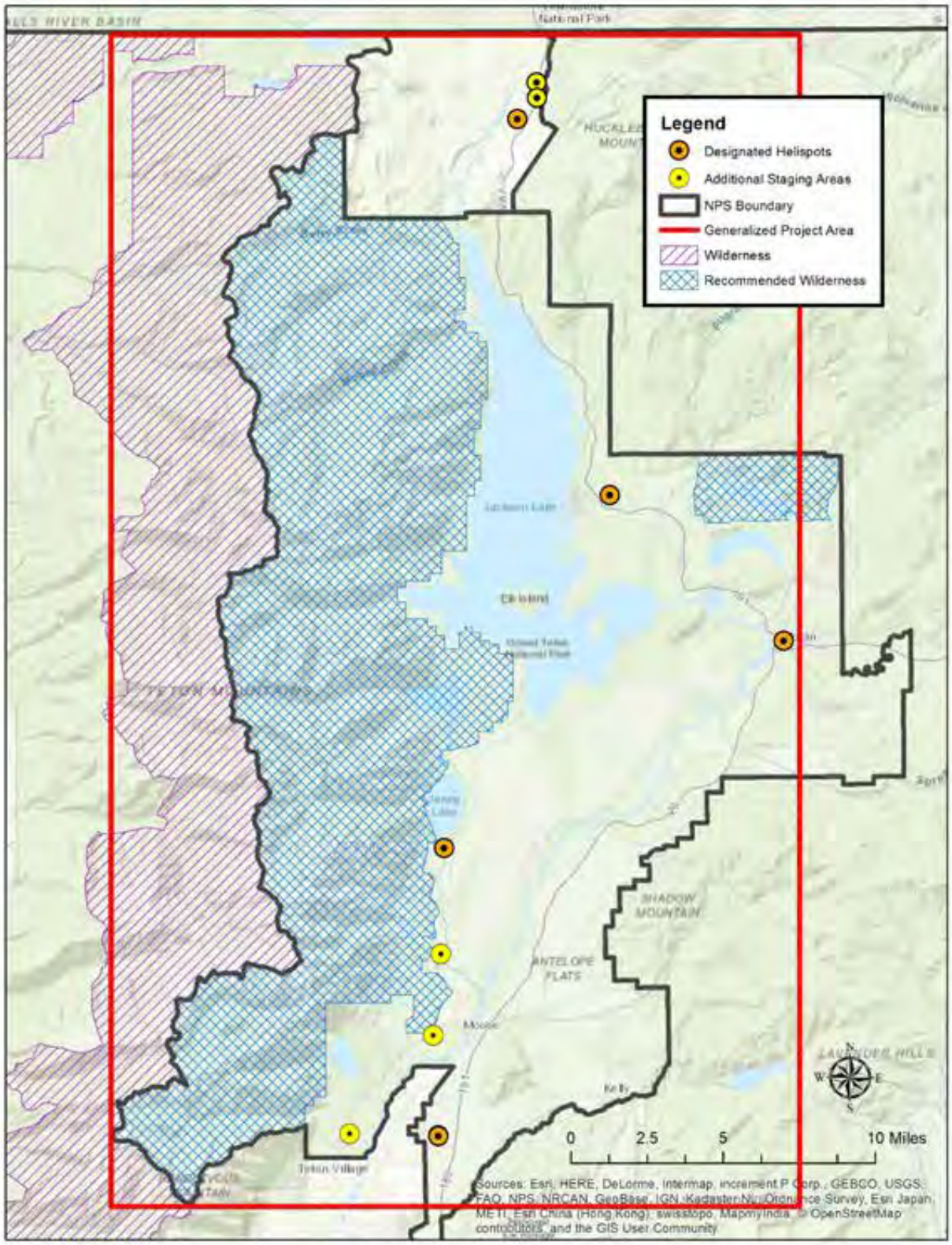

Figure 1. The generalized project area (outlined in red), Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway, Wyoming, 2019.

6.0 Species Considered and Evaluated

Five federally listed or proposed wildlife species and one critical habitat occur or have potential to occur within the project area (Table 2). Three of these species (Canada lynx, grizzly bear, and wolverine) are retained for further analysis (see below).

Table 2. Endangered, threatened, and proposed species of Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway, 2019.

Common Name (Scientific Name)	Status[1]	Habitat Description	Potential Occurrence in Teton Range?	Rationale for Exclusion[2]
Canada lynx *(Lynx Canadensis)*	T	Boreal forest types and adjacent habitats. Distribution is closely tied to that of snowshoe hares. In Wyoming lynx primarily occur in spruce-fir and lodgepole pine forests.	Yes	Retained
Canada lynx critical habitat	Designated	A small amount of designated critical habitat for lynx occurs within the John D. Rockefeller Parkway outside of the project area.	Yes	NICH
Grizzly bear (*Ursus arctos*)	T	Occupies a wide variety of habitats, including areas with extensive forested cover interspersed with grasslands and meadows, shrublands, and riparian communities. Grizzly bears are omnivorous generalists that are highly adaptable. In Wyoming grizzly bears occur in the northwest portion of the state.	Yes	Retained
North American wolverine (*Gulo gulo*)	PT	The wolverine is a habitat generalist, typically associated with large tracts of remote, undisturbed mountainous areas.	Yes	Retained
Whitebark pine	C	Typically grows at timberline or below timberline in the subalpine zone. In Wyoming the elevation distribution for whitebark pine is generally between 7,000-10,500 feet.	Yes	NE
Yellow-billed cuckoo (*Coccyzus americanus*)	T	Yellow-billed cuckoos breed in dense willow and cottonwood stands in river floodplains.	No	ELE, HAB, NE

[1] Status Codes: E=federally listed endangered; T=federally listed threatened; P= federally proposed for listing; Ex/N = Experimental/Nonessential (treated as threatened in NPS units), C= federal candidate for listing (warranted but precluded); and CH=designated critical habitat; 2 Exclusion Rationale Codes: ODR=outside known distributional range of the species; HAB= no habitat present in analysis area; ELE= outside of elevational range of species; NE = action not expected to affect the species; NICH = action not expected to change amount or condition of critical habitat.

Whitebark pine, the yellow-billed cuckoo, and designated critical habitat for Canada lynx were dismissed from further analyses. These species and critical habitat would not be impacted by implementation of Alternative C, consequently they are dismissed from further analysis. None of proposed actions in Alternatives would affect whitebark pine or its habitats. Yellow-billed cuckoos are migratory and generally are only present in northwest Wyoming during the summer months. They nest in low elevation riparian woodland forests, which do not occur in the action area. Although a small amount of designated critical habitat for lynx occurs within the action area, no activities that would change the amount or

condition of lynx habitat are proposed.

7.0 Evaluated Species Information

7.1 Field reconnaissance

Although no survey or research efforts were specifically conducted for this project, there have been numerous efforts over the last 20 years to assess the current status of Canada lynx, grizzly bears, and wolverine in the Greater Yellowstone Ecosystem (GYE), including in GRTE. These efforts have focused on documenting distribution and movements of both species and better understanding their ecology.

The list below summarizes Canada lynx research and survey efforts conducted in the southern GYE:

- Wyoming Game and Fish Department (and US Forest Service Rocky Mountain Research Station in some years) tracks surveys and tracking of radio collared individuals, 1995-2005;
- National lynx survey grid in Wyoming Range west of Big Piney, 2000-2001;
- Track surveys in GRTE and adjacent Bridger-Teton National Forest led by S. Pyare, 2000-2002;
- Yellowstone National Park conducted extensive surveys for lynx throughout the park, 2001-2004;
- Endeavor Wildlife Research conducted extensive surveys for lynx throughout the Bridger-Teton National Forest, 2004-2005 and 2008-2009; and
- US Forest Service mesocarnivore survey (included survey sites in GRTE-JODR), 2016-2017;

Since 1973, the Interagency Grizzly Bear Study Team has conducted short- and long-term research that addressed needs for bear management; monitored the grizzly bear population, and their habitats, foods and impacts to humans; and provided technical support to agencies and other groups responsible for the immediate and long-term management of grizzly bears in the Greater Yellowstone Ecosystem (GYE), which includes the park. In addition to annual reports on the state of the grizzly bears in the GYE, examples of these works relevant to grizzly bears that use the park include the following:

- Assessment of bear diets in the park led by Cecily Costello of Montana Fish, Wildlife and Parks in collaboration with the park, Shoshone National Forest, and the U.S. Geological Survey, 2004-2006.
- Examination of habituation and management of grizzly bears in Yellowstone and Grand Teton National Parks, led by Kerry Gunther of the National Park Service, 1984-2014.
- Evaluation of temporary bear movements as a potential response to the elk reduction program in the park led by Frank van Manen of the U.S Geological Survey in collaboration with the park, 2014-2015.

The following is a summary of wolverine research and survey efforts conducted in the Tetons since the late 1990s.

- Capture collaring effort led by Jeff Copeland in collaboration with Grand Targhee Ski

Resort and Teton Valley 4H, 1997-2000;

- Hornocker Wildlife Institute and then Wildlife Conservation Society led efforts to investigate wolverine ecology, 2000-2011;
- Round River Conservation and US Forest Service Rocky Mountain Research Station led effort to investigate interactions between wolverines and winter recreation, 2013-2016;
- US Forest Service mesocarnivore survey using camera traps, 2016-2017; and
- Tri-State Wolverine Project using camera traps, 2017.

In March 2017, the US Forest Service survey effort detected a single wolverine at a camera station in the Berry Creek drainage at the north end of the park. Wyoming Game and Fish Department personnel also detected a wolverine at a sampling site east of the park in the Teton Wilderness in March 2017.

7.2 Species Status and Biology

Canada lynx

Status - The Canada lynx was listed as a threatened species on March 24, 2000. The USFWS determined that the lack of protections for lynx in federal land and resource management plans rendered them inadequate to protect the species (USFWS 2000). Critical habitat was designated for Canada lynx in 2006 and revised in 2009, but no critical habitat was designated within the park. However, in September 2013, the USFWS announced a proposal to revise the critical habitat designation for Canada lynx in the contiguous United States. In September 2014, the USFWS published a final rule that revised the critical habitat designation for the lynx DPS and a revised definition for what constitutes the range of the DPS (USFWS 2014b). The revised critical habitat designation includes habitat within the northeastern corner of the park.

Life History - The Canada lynx is a medium-sized (17-23 lbs.), short-bodied cat (26-34 in. long) with long legs and an overall stocky build (Clark and Stromberg 1987) with males slightly larger than females. Paws are large and well-furred, ears tufted, tail blunt and short, and the head has a flared facial ruff. Winter coloring is typically grizzled brownish-gray mixed with buff or pale brown on the top and grayish-white or buff-white on the underside. In summer, the pelage is more reddish to gray-brown. The tail is black-tipped all the way around.

The breeding season for Canada lynx lasts a month with timing dependent on the local climate (March-May). Gestation lasts approximately 64 days and young are typically born in May or early June. The dens are generally situated mid-slope and face south or southwest. Litters (1-8 kittens) tend to be larger when prey is abundant. Canada lynx kittens (6-9 oz. at birth) have greyish buff fur with black markings. They are blind and helpless for the first 14 days, and are weaned at 12 weeks.

Habitat Requirements and Distribution in Analysis Area - The common attributes of lynx habitat across its range include dense horizontal cover, persistent snow, and moderate to high snowshoe hare densities (Interagency Lynx Biology Team 2013). Mixed-conifer forest, including

Table 3. Lynx habitat within Lynx Analysis Units (LAU) in Grand Teton National Park, 2013.				
LAU	**LAU size (acres)**	**Lynx habitat (acres)**	**Lynx habitat (acres) in suitable condition (% of total habitat)**	**Lynx habitat (acres) in unsuitable condition (% of total habitat)**
Berry	37,503	29,965	25,118 (84%)	4,847 (16%)
Webb	28,311	14,091	12,687 (90%)	1,404 (10%)
Steamboat	18,557	15,784	15,308 (97%)	476 (3%)
Two Ocean	30,005	20,199	18,250 (90%)	1,949 (10%)
Granite	37,481	16,131	16,022 (99%)	109 (0.6%)

spruce-fir and lodgepole pine, are the primary vegetation types used by lynx in the Rocky Mountains (Interagency Lynx Biology Team 2013). Young conifer forests (roughly 10–40 years post-disturbance) that have high densities of regenerating stems that protrude above the snow provide foraging habitat for lynx. Mature multi-storied confer stands with well-developed understories also provide foraging habitat. Lynx den sites generally occur in mature conifer forests with abundant coarse wood debris and dense horizontal cover (Interagency Lynx Biology Team 2013).

The analysis area falls within the Greater Yellowstone core area identified for lynx (USFWS 2005). Lynx habitat in the park was mapped in accordance with the Canada Lynx Conservation and Assessment Strategy (Figure 2; Ruediger et al. 2000). Five lynx analysis units (LAUs), and associated habitat and conditions were identified within the park (Table 3).

Regional and Local Distribution - Lynx historically occupied (Reeve et al. 1986), and apparently still persist, in Wyoming in low numbers. The best contiguous lynx habitat in Wyoming is in the northwestern and western portion of the state, while the remainder of lynx habitat in the state is highly fragmented, widely dispersed, and typically isolated by large expanses of arid shrubland (Ehle and Keinath 2002). The distribution of documented lynx specimens and observations in Wyoming indicate that they most consistently occupy the Salt River, Wyoming, Teton, Wind River, Gros Ventre, and Absaroka mountain ranges (Reeve et al. 1986). Lynx are recorded less frequently in the Uinta and Bighorn ranges, and very sporadically in eastern Wyoming (Beauvais et al. 2001, Murphy et al. 2006).

A query of the park's rare species observation database turned up 18 reports of lynx, but the reliability of these reports is unknown. No lynx observations have been reported in ≥10 years. Pyare (2005) conducted hair snag and track surveys from 2000-2002 in portions of the park and the Bridger-Teton National Forest. No lynx were detected at hair snag locations. One possible set of lynx tracks and a day bed were found in the Arizona Creek drainage in January 2002. This area is located north and east of the analysis area, east of highway 89 and southwest of Huckleberry Mountain. Track densities for potential lynx prey species were also high in this area (Pyare 2005). Murphy et al. (2006) documented lynx presence and distribution in Yellowstone National Park from 2001-2004. They confirmed lynx presence at three locations in the eastern portion of the park. Holmes and Berg (2009) conducted lynx surveys in the park and surrounding National

Forest and Yellowstone National Park in 2009. No lynx were detected within the park, but lynx tracks were located on Togwotee Pass east of the park on six separate occasions and two sets of possible lynx tracks were found in Yellowstone. Lynx from the Colorado reintroduction occasionally dispersed to Wyoming (Shenk 2007). An area of high density lynx use was historically documented in the park on the west side of Jackson Lake north of Moran Bay.

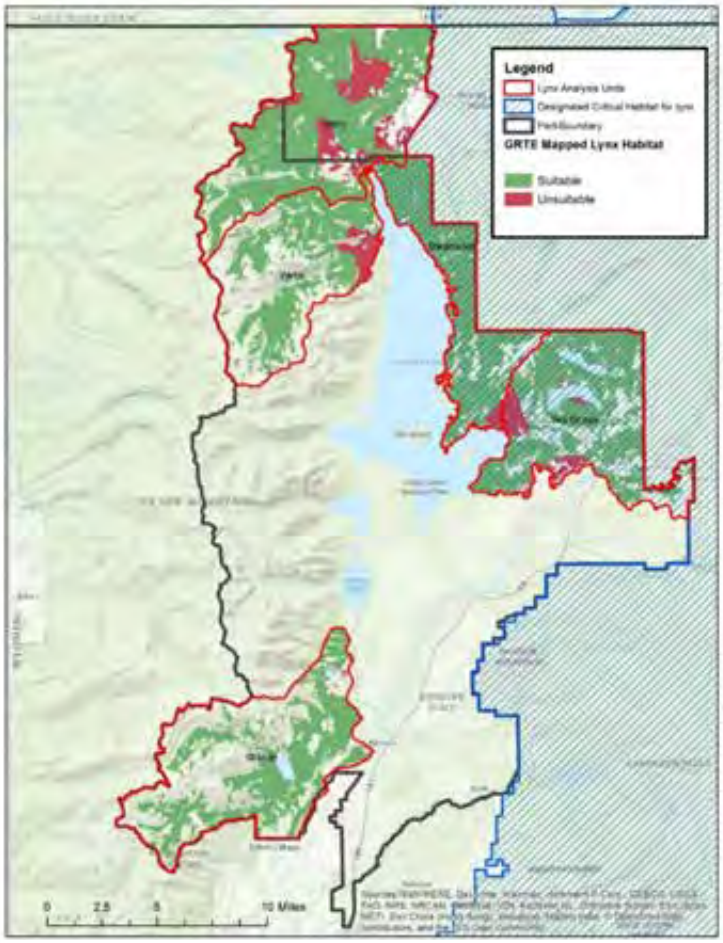

Figure 2. Condition of mapped lynx habitat (suitable or unsuitable condition) and delineated Critical Lynx Habitat, Grand Teton National park and the John D. Rockefeller, Jr. Memorial Parkway, 2013.

Threats - The updated Lynx Conservation Assessment and Strategy (Interagency Lynx Biology Team 2013) identified four anthropogenic influences that were of concern to lynx conservation including: climate change, vegetation management, wildland fire, and fragmentation. Potential effects of climate change include: 1) possible elevational or latitudinal shifts in distribution of lynx and their prey, 2) changes in periodicity of snowshoe hare cycles, 3) reductions in the amount of lynx habitat and associated lynx population size due to changes in precipitation, particularly snow suitability and persistence, and changes in the frequency and pattern of disturbance events, 4) changes in demographic rates, and 5) changes in predator-prey relationships (Interagency Lynx Biology Team 2013). Vegetation management practices can have beneficial, neutral, or negative effects on lynx and snowshoe hare habitat and populations. Adverse effects can result from treatments that reduce dense horizontal cover that provides habitat for snowshoe hares. Treatments that remove understory species, reduce stem densities, or remove trees in multi-stored forests can diminish the habitat value of forests for snowshoe hares and lynx. Wildland fire management may have short-term adverse but long-term beneficial effects, as there is typically a reduction in cover after a burn, but as regeneration and succession progresses over the next 10–40 years suitable habitat conditions for snowshoe hares return. Permanent or temporary removal of forest cover, development of highways and infrastructure, and other forms of intensive development can fragment lynx habitat. Fragmentation can adversely affect lynx by reducing the total amount of lynx habitat, increasing the isolation of habitat patches, or reducing the ability of wildlife to effectively move between patches of habitat.

Grizzly bear

Status - Grizzly bears once roamed much of the western United States, but were extirpated from much of the historic range by the middle of the twentieth century (USFWS 1993). A small population persisted in Yellowstone National Park. Grizzly bears were listed as threatened under the ESA in 1975 (USFWS 1975), and a recovery zone was subsequently delineated. On March 29, 2007, the USFWS removed the Yellowstone distinct population segment of grizzly bears from the threatened species list (USFWS 2007b), but on September 21, 2009, the Federal District Court in Missoula, Montana issued an order enjoining and vacating the delisting of the Greater Yellowstone Area grizzly population. This was upheld by the 5th Circuit Court of Appeals in November 2011. The Yellowstone grizzly bear population was delisted on June 30, 2017 due to its strong population numbers (USFWS 2016c), but was relisted as Threatened under the ESA by judicial order in late September 2018.

Grizzly bear management within GRTE-JODR is governed by the park's Human-Bear Management Plan (NPS 1989), Bear Hazing and Aversive Conditioning Policy (NPS 2018), the Interagency Grizzly Bear Guidelines (Interagency Grizzly Bear Committee 1986), the Grizzly Bear Recovery Plan (USFWS 1993), and the Conservation Strategy (Strategy) for the Grizzly Bear in the Greater Yellowstone Area (USFWS 2016). Although, with the relisting of the grizzly bear in 2018, the Strategy is not currently in effect, the NPS uses both the Recovery Plan and the Strategy as guidance in monitoring and managing the effects of NPS activities on the grizzly bear.

The IGBST annually monitors unduplicated females with cubs of the year (COY) within the GYE; calculates a total population estimate for the entire GYE based on the model-averaged estimate of females with COY; monitors the distribution of females within each bear management unit within the Recovery Zone; and monitors all sources of mortality. The most recent estimate of the area occupied by grizzly bears in the Yellowstone Ecosystem is approximately 25,038 mi^2. Grizzly bears continue to expand outward in the GYE, with the greatest expansion occurring in the northern, eastern, and southern regions of the range. In 2018, 18 of 18 bear management units in the GYE were occupied by female grizzly bears with COY, and 17 units had verified observations of females with young in at least 3 years of the last 6-year period (2013-2018). The estimate for the Demographic Monitoring Area (DMA), which includes the GYE, was 709 bears (95% CI 632-786) in 2018. The DMA is the area that demographic criteria for the Yellowstone grizzly bear population is monitored and evaluated.

Life History - Mating season is typically June-July; embryos do not implant and develop until near or at onset of winter torpor. In January, usually one to three cubs are born (approx. 1 lb). The cubs gain weight quickly and often reach 10-20 pounds by the time they emerge from the den. Cubs remain dependent upon their mother's milk for almost a year and stay with their mother for up to three years. They typically reach breeding age at about 4.5-5.5 years, although in some cases they may not breed until 8.5 years. When they do reach breeding age, females usually breed

once every three years. Males compete with each other for breeding opportunities and seek females each year. Grizzlies usually live to 15-20 years of age, and a few survive for up to 30+ years.

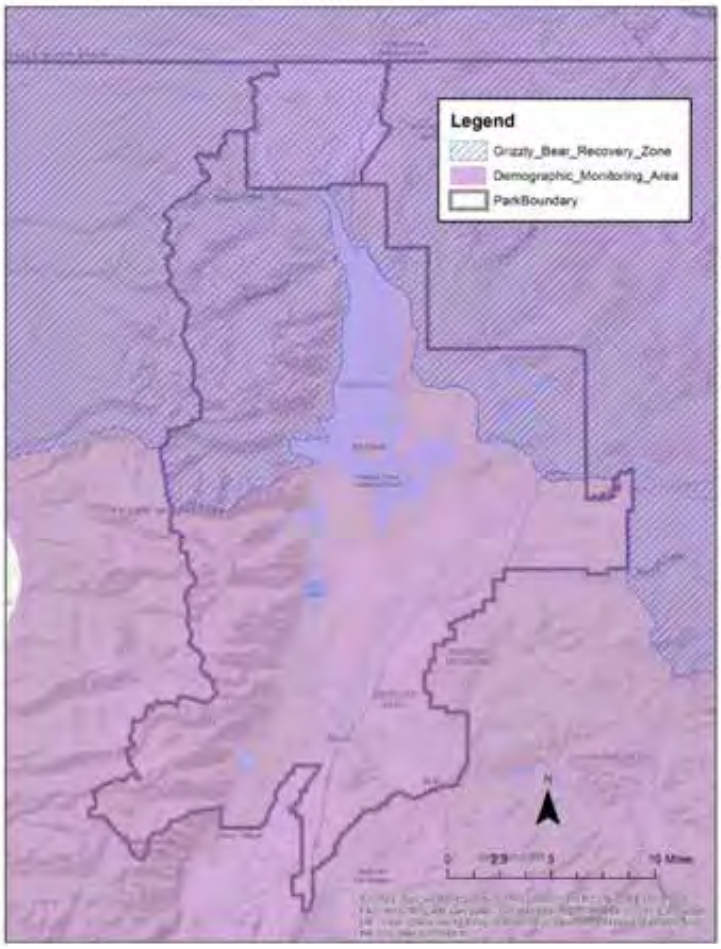

Figure 3. The Recovery Zone and Demographic Monitoring of grizzly bears in Grand Teton National Park and John D. Rockefeller, Jr., Memorial Parkway, 2019.

In preparation for winter, bears increase their food intake significantly during a life stage called hyperphagia. Hyperphagia is typified by maximizing nutrient intake and increasing rate of deposition of body reserves (Schwartz et al. 2014). Early hyperphagia begins in August and typically continues through September–October and/or until food availability decreases to trigger the period of torpor (i.e., denning). Late in the fall, grizzly bears begin looking for a location to dig a den, and may travel long distances before finding a suitable area. Generally, they seek remote areas where deep snow will serve as insulation until spring. Grizzly bears typically enter their dens in late October-November (Table 4), although in GRTE bears have been observed in December and early January. Male grizzly bears usually emerge from the den in March-April, while females emerge in late April-May (Table 4).

Habitat Requirements and Distribution in Analysis Area - Grizzly bears occupy a variety of coniferous forest and rangeland habitats within and adjacent to the park, including the analysis area (Figure 1). They are a wide-ranging species that requires adequate space and isolation from humans, suitable den sites, and an adequate and diverse food base. Grizzly bears have large home ranges (adult females = 50-300 mi^2; adult males = 200-500 mi^2) that encompass a diversity of habitats in typically montane associations. Indeed, their use of the landscape is a function of seasonably available food and the presence of humans and their activity. Grizzly bears are flexible omnivores that feed on a great variety of food, depending on seasonal availability and what is available within their home range. Bears typically feed on carrion, emergent vegetation, and ungulate neonates during the spring and early summer. In summer and fall, they may move to

Table 4. Week of den entry for 3 classes of grizzly bear in the Greater Yellowstone Ecosystem, 1975–1999.

	Den Entry		Den Emergence	
Class	**Mean week**	**Latest week**	**Mean week**	**Latest week**
Known pregnant females	1st week Nov.	1st week Nov.	4th week Apr.	4th week Apr
Other females	2nd week Nov.	2nd week Nov.	3rd week Apr.	3rd week Apr.
Males	2nd week Nov.	3rd week Nov.	4th week Mar.	4th week Mar.

Source: Haroldson et al. 2002

higher elevations and shift their diet to fruits and whitebark pine nuts (USFWS 1993). Plant matter is important diet component in spring and summer, and bears may forage in riparian areas, avalanche chutes, and ungulate winter ranges. Gunther et al. (2014) determined that the most frequently detected items in 11,478 scats collected over 37 years (1943-2009) were grasses (58.7%); ants (15.8%); whitebark pine seeds (15.4%); clover (11.2%); and dandelion (10.9%). Other items frequently detected were elk (8.3%); thistle (6.9%); horsetail (5.6%); yampa roots (4.9%); *Vaccinium* spp. berries (4.9%); cutthroat trout (4.4%); biscuitroot (4.0%); springbeauty (2.9%); bison (2.8%); and fireweed (2.7%). Grasses, ants, and elk were found in the collected scats in all years; clover was present during 97% of years; and elk, thistle, and horsetail were found in 94% of years.

Regional and Local Distribution - Grizzly bears have increased from relatively uncommon to common in the park during the last 20 years, in conjunction with a steady trend toward increasing bear density in the southern GYA. Grizzly bears continue to expand their range outside the recovery area. Although the recovery area only overlaps the northern portion of the park/analysis area (Figure 3), the entire park is now considered occupied grizzly bear habitat (Bjornlie et al. 2014). Indeed, bears are seen throughout the park. In particular, grizzly bear activity in the northeastern quarter of the park (i.e., Jackson Lake's eastern shores to the park boundary east of Moran) has been common for many years. Grizzly bears frequent elk calving areas in the willow flats near Jackson Lake Lodge and the Snake River bottom in the spring and early summer. Since 2008, sightings of grizzly bears (including those with dependent young) have been increasingly reported in the southern third of the park. In 2018, grizzly bears frequented the Moose-Wilson Corridor south of Moose where berry producing shrubs were abundant. Bears were also observed along east boundary of the park (Antelope Flats-Shadow Mountain). Bears are also commonly seen on Blacktail Butte in the late fall-early winter where they likely seek out elk remains left behind by participants in the Elk Reduction Program.

Threats - Human-caused mortality and habitat loss are the primary threats to grizzly bears. Maintenance of adequate, secure habitat along with management of grizzly bear/human conflicts is key to the long-term sustainability of grizzly bear populations. In the GYE, the majority of known grizzly bear mortality is attributable to human causes. Of the grizzly bear mortalities documented in the GYE in 2018, 41 of 46 mortalities in the DMA were attributable to human causes: 39% were related to site conflicts or human injury, 24% were livestock related, and 20% were hunting related.

Secure habitat is important to enable bears complete access to their life-history requirements. Human presence and activity can limit habitat use, increase human-bear interactions, and (or) attract bears to unnatural or unsecured food sources. This increases the mortality risk for bears. Developed sites in grizzly bear habitat increase the potential for conflict with humans primarily due to the possible availability of human foods. Developments also reduce the effectiveness of the natural habitat near these sites (i.e., functional habitat loss). The larger the developed site and the more people using the site, the greater the potential for conflicts and loss of functional habitat (Schwartz et al. 2010). This increases the risks of conditioning bears to unnatural foods, conflict with humans, and likely removal of food-conditioned bears. Activities associated with human presence and developments can often result in continual management actions that adversely impact bears (USFWS 2007a). However, providing secure food and trash storage, enforcing storage regulations for attractant, and information and education efforts can mitigate much of the potential for these types of conflicts.

Wolverine

Status - The USFWS proposed listing the wolverine as threatened in February 2013. In August 2014 the species was withdrawn from consideration after the USFWS determined that the factors affecting the species were not as significant as initially thought (primarily due to uncertainty regarding the dependency of wolverines on late spring snowpack, and the inadequate spatial resolution of existing climate models to predict changes at a scale relevant to the species). Several environmental groups filed legal challenges to the decision to withdraw the species from consideration, and in April 2016 a Montana district court overturned the decision, effectively returning the species to the proposed threatened status of 2013 (USFWS 2016a).

Habitat Requirements and Distribution in Analysis Area - Wolverines generally select areas that are cold and have persistent spring snow, but they do not select for any specific vegetation/habitat type (USFWS 2013). Wolverines require large tracts of land to accommodate large home ranges and extensive movements (WGFD 2017a, Banci 1994). In Wyoming, breeding populations are primarily found in the prominent northwestern mountain ranges. They use several habitats and have been located in forested drainage bottoms, sparsely timbered cirque basins, and steep, remote high-elevation habitat. The primary wolverine habitat during the winter is mid-elevation conifer forest. Summer use of high-elevation cirque habitats is related to the availability of prey and den sites, as well as relief from heat (Copeland et al. 2007). Due to their large home range size and habitat needs, this species is rare and uncommon and most likely always has been. Wilderness and roadless lands account for much of the areas wolverines are known to use, although it is unknown whether this is due to avoidance of people, or whether wolverines tend to choose areas that are not conducive to human development (Copeland et al. 2007). Wolverines do appear capable of adjusting to human disturbance (USFWS 2013). Suitable habitat is available within the park and there is one documented individual likely traveling through and/or living in the montane portion of the park, which may include the action area.

Life History - Breeding commences at ≥4 years old, and occurs every two to three years with average litter sizes just over one cub. Females give birth to two or three young in late winter to early spring. Young are born in dens dug through the snow to ground level in the upper subalpine

zone, at or near treeline, and are associated with boulder fields, avalanche debris, or log jams. A source of carrion or other food is usually nearby. Wolverines appear to be highly selective in choice of natal denning and kit rearing habitat. The persistence of snowpack into late spring is a strong determining factor in wolverine presence due to its importance in denning (Copeland et al. 2010, USFWS 2013). Cold, structured microsites are used to cache food, as this reduces competition from insects, bacteria, and other scavengers (Inman et al. 2012). Offspring accompany their mother for about a year before they disperse from the natal area. Wolverines are highly territorial and naturally occur at very low densities owing to their large spatial requirements.

Wolverines are opportunistic feeders and consume a variety of foods depending on availability. They primarily scavenge on carrion killed by larger predators, such as wolves, bears, cougars, and humans, or animals that have died from natural causes (Hornocker and Hash 1981, Banci 1994). They occasionally kill their own prey when the opportunity arises, typically small mammals or birds, but do prey on neonatal ungulates; they may also eat fruits, berries, and insects. The constant search for food keeps them moving throughout their range with daily movements of 20 miles common. Hornocker and Hash (1981) have suggested that food availability is the main factor determining the movements and range of wolverines. Connectivity between wolverine populations and habitat patches is generally tied to persistent spring snow, and wolverines appear to be able to disperse between habitats and through areas where human developments occur (Schwartz et al. 2009, USFWS 2013). As concluded in the draft recovery outline for wolverine (USFWS 2013) evidence shows that dispersing wolverines can cross transportation corridors with success.

Regional and Local Distribution - The current distribution of wolverines in the region is not thoroughly known. Several research projects are underway to better understand the species' distribution in northwestern Wyoming, which lies at the southeastern limit of the species' known or suspected range at present. Although rare within the Teton Range wolverines are known to inhabit the high elevation remote portions of the park. Since the late 1990s there have been numerous wolverine focused research and survey efforts conducted in the Tetons (see above). In recent years, wolverine observations have been scant, however, in March of 2017 a single wolverine was detected at a camera site established as part of a mesocarnivore survey in the north end of the park. Other recent observations (tracks and sightings) of an individual(s) in the Tetons west of the piedmont lakes (i.e., Phelps, Jenny, String, and Leigh Lakes) suggest at least one wolverine may reside in the Tetons. Recent field work has documented a total of three individuals in the Gros Ventre, Wind River, and Southern Absaroka mountain ranges, in addition to the one individual found in the Teton Range (Inman et al. 2015, Heinemeyer and Squires 2015).

Although population levels of elusive species like wolverines are difficult to determine with certainty, it appears that there may be just one individual currently occupying the available habitat in the park. Recent research on the species' distribution in the Teton Range has been conducted by the Wolverine Winter Recreation Research Project, led by the U.S. Forest Service Rocky Mountain Research Station and Round River Conservation Studies. Trapping efforts during the winters of 2014 and 2015 on both the west and east sides of the Teton range northwest

of Jackson, Wyoming resulted in the capture of only a single male (the same individual each year), whose home range was estimated to cover approximately the northern two-thirds of the Teton Range, including the northwestern portion of the park (Heinemeyer and Squires 2014, 2015).

Threats - Loss and fragmentation of habitat may isolate populations, reduce genetic diversity, and increase the risk of population extirpation (Wyoming Game and Fish Department 2017a). These risks result from three main factors: (1) small total population size; (2) effective population size below that needed to maintain genetic diversity and demographic stability; and (3) the fragmented nature of wolverine habitat in the contiguous U.S. which results in smaller isolated "island" patches separated by unsuitable habitats. Loss of persistent spring snow related to climate change is considered to be the main factor in loss/fragmentation of wolverine habitat (USFWS 2013), and harvest is considered the factor most affecting wolverine survival, with trapping accounting for the greatest number of individuals killed (Hornocker and Hash 1981, Banci 1994, Krebs et al. 2004, Squires et al. 2007).

8.0 Environmental Baseline

As defined under ESA, the environmental baseline includes past and present impacts of all federal, state, and private actions in the action area; the anticipated impacts of all proposed federal actions in the action area that have undergone formal or early section 7 consultation; and the impact of state and private actions which are not included in the environmental baseline.

8.1 Examples of Recent Consultations with FWS within the Analysis Area

- Winter operations for YELL and GRTE
- North Park Road Construction
- Reissuance of grazing permits in GRTE
- GRTE Fire Management Plan (and multiple prescribed fires and fuel reduction treatments)
- Trails Programmatic Assessment
- White Grass Ranch Rehabilitation and Adaptive Re-use
- GRTE Transportation Plan
- USFWS/NPS Bison and Elk Management Plan
- Moose Headquarters Rehabilitation
- GRTE Historic Properties Management Plan
- GRTE/YELL Snake Headwaters Plan
- Glacier and Climate Monitoring
- Jenny Lake Renewal
- UW-NPS Research Station Rehabilitation
- Moose-Wilson Corridor
- Gros Ventre Roundabout
- Jackson Hole Airport

8.2 Past and Current Activities within the Analysis Area

Past and ongoing current actions in the analysis area include: trail maintenance, search and rescue operations, fire management activities (including long-term fire suppression), vegetation and exotic plant management, scientific or social science research and monitoring activities, year-round backcountry recreation, human development, ski area development/management, permitted helicopter skiing, public hunting outside the park, and overflights and airport activity.

The amount of wildlife habitat in the Teton Range has been reduced due to human disturbance and fire suppression. Ski area development has resulted in the direct loss of wildlife montane habitats; indirect loss of habitat through avoidance behavior and increased movements has been due to winter (e.g., bighorn sheep; Courtemanch 2014). Fire can influence wildlife distribution through changes in habitat conditions (e.g. vegetation type, seral stage, amount and quality of various habitats). Decades of fire suppression has altered natural fire regimes and changed vegetation and wildlife habitat. Continued fire suppression could result in further negative impacts to vegetation and wildlife habitat. Alternatively, decisions to manage wildfires could have long-term beneficial effects to wildlife habitats, however, the timing and specific locations of fire events would influence the magnitude and type of impacts and benefits.

In the Teton Range outside of the park, many wildlife species, such as elk, mule deer, bighorn sheep, mountain goats, and predators, can be hunted. These seasons are managed by the Wyoming Game and Fish Department. Hunting in areas close to the park boundary could reduce the numbers of wildlife within the park as these species generally range across political boundaries. However, hunting quotas are typically tied to herd unit objectives.

The park performs and authorizes various scientific surveys and research efforts within the action area (Figure 1). These studies have minimal impacts on wildlife in particular. These activities provide indirect benefits to wildlife by increasing the understanding of the status of wildlife populations and other resources of interest in the park. Wildlife monitoring from fixed-wing aircraft and helicopters occur within the action area several times throughout the year. Fixed-wing telemetry and observation flights have low potential to disturb wildlife as these flights occur infrequently, at a time of year when habitat is not limiting. On the other hand, winter helicopter surveys, helicopter supported search and rescue operations, and non-permitted scenic flight tours have some potential to disturb wildlife if they are encountered along flight paths. Such interactions could result in short-term (approx. ≤1 hour) increases in movement and physiological stress that would subside once the aircraft has passed. Aircraft landing and departing the Jackson Hole Airport typically follow designated flight paths away from the Teton Range, thus are unlikely to directly disturb wildlife. However, incoming and outgoing aircraft and airport operations add to the background noise audible to wildlife in the Teton Range.

9.0 Effects to Evaluated Species and Determinations

9.1 Federally Listed Species - Direct and Indirect Effects

Canada lynx

Lynx are strongly tied to subalpine forests with abundant snowshoe hare, whereas mountain goats

are generally associated with non-forested alpine or subalpine habitats near steep terrain. In addition, lynx are typically active at dawn and dusk, when monitoring and management activities would not occur. There are no direct effects from these Alternative C to lynx, and the likelihood of temporal and spatial overlap between lynx and mountain goats during monitoring or management activities is low. Notwithstanding, aircraft could overfly habitat suitable for lynx, thus possibly disturbing any individuals or prey species that are present. Any disturbance is likely to be limited to the time the aircraft is passing overhead (<10 minutes). Additionally, no lynx have been observed or detected in the park for ≥10 years, so the likelihood of this potential limited disturbance to a lynx is highly unlikely.

Grizzly bear

Proposed helicopter-based mountain goat removal actions would occur within occupied grizzly bear habitat. The northern portion of the action (Teton Range north of Leigh Canyon) is within the grizzly bear recovery zone (Fig. 3), while the southern half is outside of the recovery zone. Mountain goat density is highest in the southern half of the Teton Range. Studies have found that low flying aircraft can affect bears: responses can range from short-term disturbance or a flight response, increased physiological stress, and/or temporary displacement from an area (Støen et al. 2010, Ditmer et al. 2015, Wilker and Barnes 1998). Actual effects are likely influenced by intensity, duration, timing, predictability, proximity of operations to the animal, or location of the animal relative to secure habitat. Thus, increased noise and activity associated with removal actions in the action area, adjacent habitats, and along flight paths could result in the displacement of bears, increased stress, and/or reduced feeding.

In the GYE, most grizzly bears are denned by late November (Table 3; Haroldson et al. 2002). Given typical weather and snow conditions in the Teton Range in late fall and availability of food resources, few grizzly bears would likely be active in the project area during the operational window for helicopter-based removal and monitoring actions (late November–mid-February). Consequently, disturbance or displacement impacts to active grizzly bears from these activities are not anticipated. Any effects would likely be insignificant and thereby discountable due to their short duration, timing (during denning period), low frequency, and localized extent (Table 1).

During denning, direct overlap of mountain goats and modeled denning habitat is limited; however, areas used by mountain goats are adjacent to potential denning habitat (Figure 4). Of 30 grizzly bear dens documented in GRTE-JODR from 2002-2017 (IGBST unpublished data), most occurred in the Teton Range. Of those, the vast majority occurred north of Colter Canyon in a portion of the park with relatively low mountain goat density (Figure 4). Grizzly bears may be particularly vulnerable to disturbance while denned, especially early in the denning period when abandonment is more likely to occur (Reed-Eckert et al. 2004). To limit this specific potential disturbance and possibility of abandonment, helicopter-based removal of goats will be from mid-December–mid-February, and when possible, be focused in areas outside potential grizzly bear denning habitat.

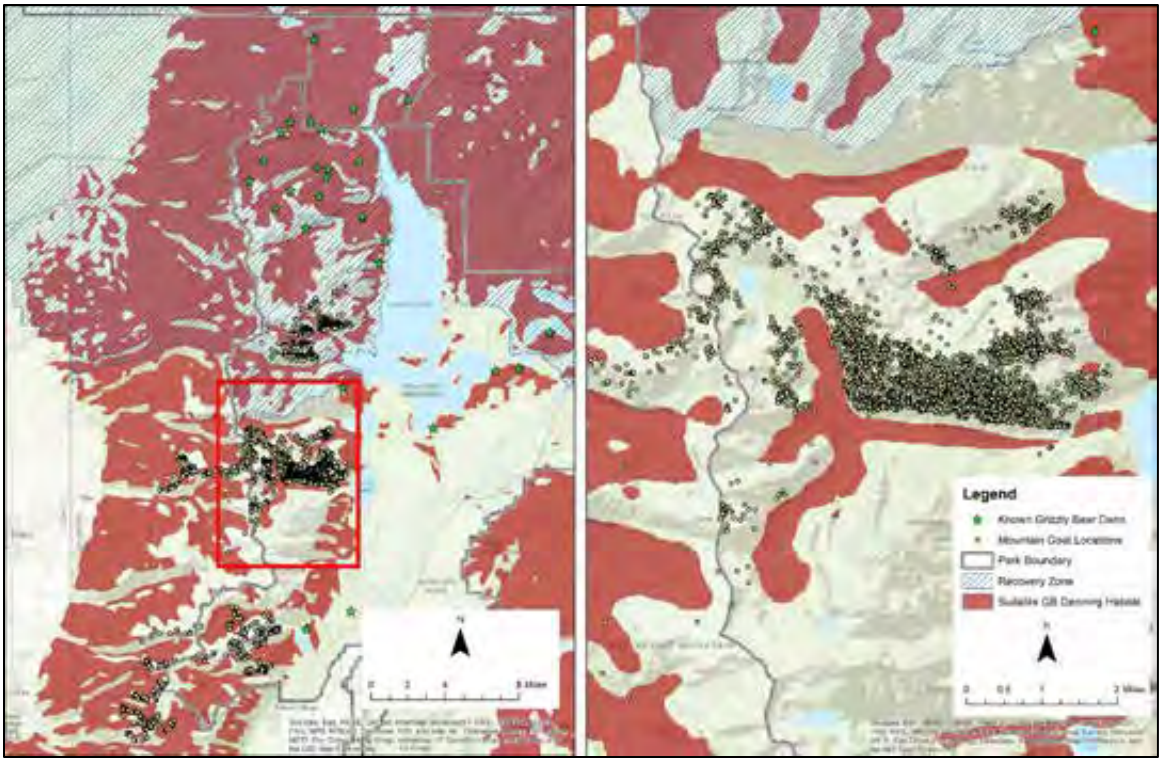

Figure 4. Potential grizzly bear denning habitat (80th percentile; Podruzny et al. 2002) and GPS locations for radio collared mountain goats in Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway and the surrounding area (left panel) and the focal project area (red inset on left panel; right panel).

Several specific Conservation Measures aimed at limiting disturbance grizzly bear den sites will be implemented:

- Personnel involved in helicopter- and ground-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of grizzly bears, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a grizzly bear is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential grizzly bear denning habitat during the sensitive denning period (grizzly bear: November–April), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If an actual or potential den location is found or suspected, either through aerial survey or collar data, an appropriate disturbance-free buffer will be established around the den. Focal helicopter activities, such as those associated with aerial removal of mountain goats, will occur between mid-December and mid-February to specifically reduce potential impacts to denning grizzly bears.

Over the last decade grizzly bear distribution and numbers have increased in the south end of GRTE, particularly in the low elevation portions of the park at the base of the Teton Range. Grizzly bear use of the parks elk reduction program is well documented (van Manen et al. 2019)

and is consistent with the findings of several studies that have documented a shift in grizzly bears distributions during ungulate hunting seasons as bears make use of animal remains left behind by hunters (Ruth et al. 2003, Haroldson et al. 2004). Such shifts in distribution can bring grizzly bears and hunters into close proximity and conflicts between the two may arise (Gunther et al. 2004). Skilled public volunteers would be used to assist with ground removal of mountain goats during a likely single management period in fall 2020 (or later). Remains of mountain goats (i.e., carcasses or gut piles) from all ground-removal activities could be a potential attractant for grizzly bears. Skilled volunteers would be authorized to remove the meat, pelt, and skull of all mountain goats they kill (USC 2019) and would be encouraged to pack out as many carcasses as safely possible. Any ground removal management period using skilled volunteers would begin after 1 October and last ≤6 weeks; and we estimate ≤10% of the mountain goat population could be removed through this program. Because the skilled volunteer program could occur during late hyperphagia, a time frame when grizzly bears are intensively focused on feeding prior to hibernation and human-grizzly bear conflicts are often high (Gunther et al. 2004), there is potential for conflicts to occur. However, the following Conservation Measures would minimize human-bear encounters that could result in a conflict from the skilled volunteer program:

- limited number of skilled volunteers will be involved that have been vetted through a rigorous screening process;
- participants will be required to carry bear spray;
- participants will received bear safety training and education;
- participants will work in groups of ≥2 people; and
- locations of mountain goat kills and remains will be reported within 12 hours, and subsequent ground-based removals will be managed to minimize activities in areas with known carcasses (as is current standard protocol for managing large carnivores).

Mountain goat carcasses left on the landscape to decompose over the winter could be a potential food source/attractant for grizzly bears. The primary operation window for helicopter-based removal actions would be mid-December through mid-February, when the majority of grizzly bears are denned. Only one 2-week operational period is anticipated on an annual basis for several years (Table 1). Locations and statuses of carcasses left over the winter will be noted, and if the locations have potential for conflict with users in the spring (e.g., ≤100 yards from trails, campsites, camping zones, cabins, etc.), temporary closures will be implemented for human safety and carnivore conservation.

Wolverine

Wolverine are tied to high elevation, remote areas where they are active year-round. Their distribution likely overlaps areas used by mountain goats throughout the Teton Range. Weaver et al. (1996) characterized wolverine as a species with low resiliency based on their life history characteristics (e.g. low density occurrence and low reproductive rates), therefore they may be particularly susceptible to disturbance at critical times of year. In winter, wolverine rely on ungulate carrion as their primary food source (Inman and Packila 2015). Availability of winter food is likely highly variable from year to year.

Actions to monitor and remove mountain goats using helicopters could disturb individual wolverine present in the vicinity. The effects of aircraft operations on wolverine likely varies with intensity, duration, timing, predictability, proximity of operations to the animal, or location of the animal relative to secure habitat. Wolverine response to aircraft activity could range from no response, to increased stress, flight behavior and displacement from preferred habitats (including displacement from carcasses).

The high elevation cirque basins of the Teton Range are considered potential denning/maternal habitat for wolverine (Inman 2013). Wolverine may be especially prone to disturbance near natal dens (Banci 1994, Copeland 1996, Magoun and Copeland 1998). Consequently helicopter-based removal activities occurring from mid-February–April could cause a reproductive female to move kits and abandon the natal den, resulting in reduced productivity or in the death of all kits. Wolverine have low reproductive rates and occur at low densities making populations susceptible to activities that cause disturbance of natal dens.

Given the potential for negative impacts (displacement or during natal denning) to wolverine from helicopter-based removal activities during late winter, several Conservation Measures specific to wolverine would be implemented to reduce the potential for adverse impacts. These include:

- Personnel involved in helicopter- and ground-based monitoring, capture, lethal removal, or translocation activities will be briefed on identification of wolverines, their tracks or other sign, and instructed to report any observations to the project manager as soon as practical.
- If a wolverine is observed, pilots will be instructed to remain ≥500 feet above ground level from the animal with no circling or direct approach.
- If helicopter activities take place in potential wolverine denning habitat during the sensitive denning period (wolverine: after mid-February), a denning survey will be performed from fixed-wing aircraft prior to beginning operations. If a den location is known or a potential den location is found, an appropriate disturbance-free buffer will be established around the den.

Given implementation of these measures and ceasing helicopter-based removal activities by mid-February, displacement and/or disturbance to denning wolverines is not expected.

Mountain goat carcasses left on the landscape to decompose could be a resource subsidy for wolverine. Utilization of mountain goat carcasses could be beneficial for wolverine, especially in winter when food resources may be limited. If wolverine find and cache some carcasses the beneficial effect could extend into the spring. However, the presence of carcasses could also be an attractant for other predators that scavenge and their presence at carcasses could increase the possibility for intraspecific interactions. Because of snow depths and winter conditions, wolves are not typically found in the high elevations of the Teton Range during the winter and therefore present little threat of competition or direct mortality to wolverine. Similarly, grizzly bears are typically hibernating during the winter months and therefore present little risk, but upon exiting the den, bears may seek out carcasses that wolverine have cached. However, given the very low

apparent density of wolverines in the Teton Range and the long evolutionary history between wolverines and large carnivores throughout their sympatric ranges, these potential interspecific interactions are unlikely and/or insignificant to wolverines.

9.2 Cumulative Effects

Cumulative effects under ESA include the effects of future state, tribal, local, or private actions that are reasonably certain to occur. Future federal actions that are unrelated to the Proposed Action are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA. Past and present impacts of non-federal actions are part of the Environmental Baseline as are the impacts of federal activities that have undergone Section 7 consultation.

Cumulative effects were evaluated as the combined effects of the proposed actions with future nonfederal actions reasonably certain to occur in or in proximity to the action area. Reasonably foreseeable future state, tribal, local, or private actions include continued backcountry recreation throughout the Teton Range by members of the local and visiting public, small aircraft and helicopter activity by private individuals above the park and adjacent US Forest Service lands, increased visitation to the area, and continued development on private lands adjacent to the park. These activities likely have some level of disturbance or displacement impacts on any lynx, wolverine, or grizzly bears present. The extent to which these species may be cumulatively impacted is unknown, but it's possible that the amount of available habitat may be affected if these species avoid areas where human activity is consistent and occurs at relatively high levels.

When the overall effects of the proposed action are combined with these foreseeable future actions, there is potential for a long-term, cumulative adverse effect on lynx, grizzly bear, and wolverine in the action area. However, when the incremental level of impact associated with the proposed actions is added to the adverse effects of the listed cumulative actions, an insignificant overall increase above current levels of adverse effect is expected.

9.3 Interrelated and Interdependent Actions

There are no interdependent or interrelated action associated with the proposed actions.

9.4 Incidental Take

There will not be any incidental take of any federally listed species under this proposal.

10.0 Effect Determination

The determination of effects for Canada lynx, grizzly bear, and wolverine are summarized in Table 5 and the rationale for each species is detailed in the following narrative.

Table 5. Summary of effects determination for the preferred alternative (Alternative C).			
Common name	**Scientific name**	**Status**	**Determination**
Canada lynx	*Lynx canadensis*	Threatened	NLAA
Grizzly bear	*Ursus arctos*	Threatened	NLAA
North American wolverine	*Gulo gulo*	Proposed	NLJ

10.2 Canada lynx

The proposed action would have insignificant and discountable effects that ***may affect, but are not likely to adversely affect***, the Canada lynx based on the following rationale:

1. Due to the limited area affected by the activity and the availability of displacement areas there would be no effect to lynx range, abundance, or distribution.
2. Mortality risk to the Canada lynx is not expected to increase as a result of mountain goat removal actions.
3. Snowshoe hare populations would not be measurably affected by the proposed action.
4. No expansion of the range of competitors and/or predators would result from the proposed action.
5. No alteration of critical habitat would occur.
6. No den sites are known in the area and are unlikely given the limited amount of suitable habitat in the project area and the results of recent survey efforts where no lynx were detected.
7. The proposed actions would not be expected to measurably affect lynx at the population level.

10.2 Grizzly bear

The proposed actions would have insignificant and discountable effects that ***may affect, but are not likely to adversely affect***, the grizzly bear or its habitat based on the following rationale:

1. The timing of the majority of helicopter-based removal activities would be conducted during the winter months (December to mid-February) when grizzly bears are in their dens.
2. Although mountain goat and grizzly bear denning habitats are adjacent to one another (Figure 4), the direct overlap is limited.
3. Several conservation measures would be implemented to reduce the potential for disturbance near known den sites.
4. Given implementation of Conservation Measures and existing regulations (Superintendent's Compendium 2019), the risk of human-grizzly bear conflicts is not expected to increase.
5. Mortality risk to the grizzly bears is not expected to increase due to the use of skilled volunteers because the program would
    a. Be limited in scope (≤6 weeks annually over 1–2 years) with tight oversight controls.
    b. Be focused in a portion of the Teton Range with lower grizzly bear density.
    c. Include rigorous selection measures and bear safety training and education requirements.
    d. Require participants to carry bear spray and work in groups of ≥2 people.

    e. Mountain goat remains will be promptly reported and participants' and visitors' will be managed to avoid areas with known carcasses (as is current standard protocol for managing large carnivores).
6. Locations and statuses of carcasses left over the winter will be noted, and if the locations have potential for conflict with users, temporary closures will be implemented for human safety and carnivore conservation.
7. Due to the limited area and time affected by the helicopter activity, there would be no effect to grizzly bear range, abundance, or distribution.
8. The proposed actions would not expected to measurably affect grizzly bear at the population level.

10.3 Wolverine

The proposed action would ***not likely to jeopardize*** the continued existence of the North American wolverine or it habitat based on the following rationale:

1. Several Conservation Measures would be implemented to reduce direct short-term effects from mountain goat removal activities. In particular, a denning survey will be performed from fixed-wing aircraft prior to beginning helicopter operations activities that may occur in potential wolverine denning habitat during the sensitive denning period.
2. If a den location is known or a potential den location is found, an appropriate disturbance-free buffer will be established around the den.
3. Due to the limited area affected by the activity and the availability of displacement areas there would be no effect to wolverine range, abundance, or distribution.
4. Wolverine reproductive rates are strongly influenced by food abundance (Persson 2005), consequently mountain goat carcasses left on the landscape could serve as a food sources for wolverine and provide a short-term beneficial effect in winter at a time when wolverine may be food limited.
5. Mortality risk to wolverine is not expected to increase as a result of mountain goat removal actions.
6. The proposed action is not expected to measurably affect wolverine at the population level.

11.0 Need for Re-Assessment Based on Changed Conditions

This BA and findings above are based on the best current data and scientific information available. A new analysis and revised BA must be prepared if one or more of the following occurs: (1) new information emerges for species currently considered in this assessment (including but not limited to a change in species distribution, newly discovered activity area, newly designated Critical Habitat, or other species information) reveals effects to threatened, endangered, proposed species, or designated/proposed critical habitat in a manner or to an extent not considered in this assessment; (2) the action is subsequently modified or it is not fully implemented as described herein which causes an effect that was not considered in this assessment; or (3) a new species is listed or critical habitat is designated which may be affected by the action that was not previously analyzed herein.

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Re_ DRAFT comms for goat removal(1).pdf

From:	Gustine, David
To:	Germann, Denise
Cc:	Simeon Caskey; Jeremy Barnum; Dewey, Sarah
Subject:	Re: DRAFT comms for goat removal
Date:	Monday, December 30, 2019 9:29:16 AM
Attachments:	Communications Plan Mtn Goat Removal Draft_30-Dec-19.docx

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back at you -- edits/additions/updates included herein

On Mon, Dec 30, 2019 at 9:03 AM Germann, Denise <denise_germann@nps.gov> wrote:

> See attached and provide comments.
> I'm working from home, and will be in the office about Noonish.
> Thanks.
>
> Denise
>
> Denise Germann
> Public Affairs Officer
> Grand Teton National Park
> 307 739 3393 Office
> 307-690-1752 Cell
> denise_germann@nps.gov

--

Dave Gustine, PhD
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Communications Plan Mtn Goat Removal Draft_30.pdf

Communications Plan

Grand Teton National Park &
John D. Rockefeller, Jr.
Memorial Parkway

Mountain Goat Removal Operations

January 6th-12th Lethal Removal
Operations Window

December 2019

For Internal Discussion Only
Do Not Distribute

GRTE/JODR - Mountain Goat Removal – January 2020
Communications Plan

This plan establishes a framework for communication with key stakeholders, including park employees and staff, partners, neighbors, elected officials, local community organizations and the general public.

Issue Background

Mountain goats are not native to Grand Teton National Park and the Teton Range. The goat population that currently resides in the Teton Range likely dispersed from a population introduced in the Snake River Range by the Idaho Department of Fish and Game roughly 20 miles south of the Park more than 45 years ago. The population of mountain goats is growing at a rapid rate and beginning to expand into habitats important to a native population of bighorn sheep whose status is very tenuous. Management of mountain goats is needed to address the impacts that mountain goats could impose on natural resources within the park, particularly to the native bighorn sheep population.

In September 2019, the Park released a Finding of No Significant Impact (FONSI) for the Mountain Goat Management Plan, with a decision to rapidly remove non-native mountain goats from the park by lethal and non-lethal methods. Beginning in January 2020, the Park will begin implementing aerial-based lethal removal techniques, using a qualified contractor.

Objectives

This plan is intended to guide strategic communications about nonnative mountain goat removal operations within the park during the January 6–12, 2020, operation window.

The objectives of this plan are to:

- Identify key stakeholders that should be aware of activities being initiated to lethally remove nonnative mountain goats from the park.
- Identify key messages to share with key stakeholders and the public regarding the mountain goat removal operations occurring in the Park, and status of the ~~Bighorn~~ bighorn ~~Sheep~~sheep,
- Identify key tasks and timelines to complete those tasks related to Mountain Goat Removal Operations planned January 6–12, 2020, and
- Identify roles and responsibilities for completing tasks identified on the timeline.

The expected outcomes of this strategic communications plan are:

1. Enhanced public and internal understanding of the threat nonnative mountain goats present to native Teton Range bighorn sheep population;
2. Enhanced public understanding of NPS management policies that support the removal of nonnative mountain goats;
3. Open and transparent communications with the public regarding lethal removal actions and any related impacts to visitors.

Key Messages:

- Mountain goats are not native to Grand Teton National Park, and without active management the mountain goat population is expected to continue to grow and expand its distribution within the park and jeopardize a herd of native Teton Range bighorn sheep.
- The rapid reduction of the park's mountain goat population is vital for the continued existence of the native Teton Range bighorn sheep herd.
- The park has a responsibility to protect native species and reduce the potential for local extinction of a native species.
- Action is needed now because a breeding population of nonnative mountain goats is established in the park. The presence of mountain goats presents threats to the already stressed native bighorn sheep herd through increased risk of pathogen transmission and competition.
- As of early 2018, the mountain goat population within the park was estimated be around 100 individuals.
- The Teton Range is home to a small, native population of bighorn sheep whose status is tenuous. Due in part to its small size, the Teton Range bighorn sheep herd exhibits low genetic diversity and is genetically isolated from neighboring herds.
- Currently the bighorn sheep population is estimated at about 80 individuals. Prior to 2015, the population was estimated to be approximately 100-125 individuals.
- The potential for resource competition and pathogen transmission between mountain goats and bighorn sheep is expected to increase.
- The National Park Service completed an environmental assessment (EA) and mountain goat management plan for Grand Teton National Park and the John D. Rockefeller, Jr. Memorial Parkway, including public comment, with a Finding of No Significant Impact (FONSI) issued in September 2019 with a decision to rapidly remove nonnative mountain goats from the park by lethal and non-lethal removal methods.
- Aerially-based lethal activities are the most efficient and effective methods to remove nonnative mountain goats and are planned for implementation in early January 2020.
- Additional removal activities will take place in the fall and next few years.

Talking Points:

- Beginning Monday, January 6 through Saturday, January 11, helicopter-based lethal removal efforts will be initiated to remove nonnative mountain goats located in the park. Aerial operations will be dependent on weather.
- For public and operational safety, a temporary area closure will be implemented during the removal activities. The closure area is bounded on the south by South, Middle and Grand Tetons, Mount Owen and Teewinot Mountain peaks; bounded on the west by the park boundary; bounded on the east by the western shores of Jackson, Leigh, String and Jenny Lakes; and bounded on the north by Rolling Thunder Mountain and Eagle Rest Peaks.
- Lethal removal activities will be performed by federal contractors with appropriate training, certifications, and skills in aviation operations and safe use of firearm protocols.
- During aerial-based lethal removal activities, mountain goat carcasses will primarily be allowed to remain on the landscape for provide biological and ecological benefits. Some carcasses may be recovered, if conditions safely allow, and used for scientific, cultural, or subsistence purposes.
- ~~The California Department of Fish and Game has a research permit……???~~Currently, in a partnership with the California Department of Fish and Game (T. Stephenson), recovered carcasses will be used to improve the understanding and measurement of body condition in populations of wild mountain goats.~~?~~
- The park is developing a skilled volunteers to assist in rapid removal of mountain goats while minimizing effects to native resources and other park visitors. ~~**skilled volunteer program.**~~
- ~~An~~ Dependent on the effectiveness of this first removal effort, an additional helicopter-based lethal removal effort may take place prior to the end of March.

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Timeline

Task	Primary Responsibility	Date to Complete/Implement
Draft Comms Plan	Denise Germann	December 23

Begin informing key contacts	Denise/Simeon/Dave (see below)	December 23
Confirm weather/operations window and contractor arrival	Sarah Dewey	December 31
Media Release and Media outreach	Denise Germann	January 2
Contractor Arrives	Sarah Dewey/Dave Gustine	January 5
Lethal Removal Implementation Begins	Dave Gustine	January 6
Lethal Removal Implementation Ends	Dave Gustine	January 11
Status report on operations	Dave Gustine/Simeon Caskey	Week of January 13

Key Contacts and Communication Tools to Share Information

Key Contact	Contact Info	Staff Assigned	Notification Tool	Due Date
Senior Leadership Team		Simeon Caskey Denise Germann	SWN SLT Meeting Email message, media release, FAQs	
Permanent and Seasonal Employees, Volunteers	GRTE_All_Employees@nps.gov GRTE_Seasonal_Employees@nps.gov	Denise Germann	Email message, Media Release, FAQs	
IMR Regional Office – Key Contacts	Resources RD Office/Comms	Simeon Caskey Denise Germann	Phone Call Email, media release	
WASO/DOI Key Contacts	Comms Resources	Jeremy Barnum Denise Germann		
GRTE Concessioners/CUA Holders	Exum, others directly impacted by closures- awareness for all	Mallory Smith-acting? Denise Germann Michael Nash	Phone Call, Email, Media release	
Media/General public/planning contacts		Denise Germann	Media release, social media posts	Jan 2
Bridger-Teton National Forest	Forest Supervisor District Ranger Mary Moore PAO Mary Cernacek Wildlife Biologist	Denise Germann Simeon Caskey	Phone call, media release	
Caribou-Targee National Forest	District Ranger Jay Pence	Simeon Caskey	Email, phone call	

Wyoming Game and Fish Jackson Office and Cheyenne Office	Brad Hovinga, Jackson Regional Supervisor 307-733-2321 Mark Goeke	Simeon Caskey Dave Gustine Denise Germann	Phone call Letter Requesting EA Comments	Complete 12/23/19
WY GF Commissioner Mike Schmidt		Simeon Caskey Dave Gustine	Phone call, media release	Completed in person (D. Gustine) on 12/17/19
Idaho Fish and Game	Curtis Hendricks, Regional Wildlife Manager 208-821-4250	Dave Gustine Denise Germann	Phone Call Letter Requesting EA Comments	Complete 12/23/19
Native American Tribes	Consultation EA Comments	Simeon Caskey	Meeting, Media Release	
US Fish and Wildlife Service	Cris Dippel, Acting Refuge Manager 307-203-6798 (cell)	Dave Gustine Denise Germann	Phone call, email, media release	Complete 12/23/19
Elected Officials Senator Barrasso- Pam Senator Enzi- Niki Representative Cheney- Lindy Teton County Commissioners- Chair Newcomb WY Governor's Office- Chris Mickey		Denise Germann	Media release Phone Call	
Bighorn Sheep Working Group		Sarah Dewey	Phone Call Email Media Release	
Wyoming Tourism- Diane Shober		Denise Germann	Phone Call Media Release	
Grand Teton National Park Foundation	Steve Cain	Dave Gustine	Phone Call	Complete 12/23/19
Grand Teton Association		Denise Germann	Media Release Phone Call	
Yellowstone NP Natural Resources Strategic Comms	New Chief? Jody Lyle	Simeon Caskey Denise Germann	Phone Call Media Release	
National Parks Conservation Association		Denise Germann	Media Release	
Greater Yellowstone Coalition		Denise Germann	Media Release	
Greater Yellowstone Coordinating Committee- David Diamond		Denise Germann	Phone Call Media Release	
Wyoming Wildlife Foundation		Simeon Caskey		
Jackson Hole Conservation Alliance		Simeon Caskey		
Previous Commenters		Denise Germann	Email Media Release	

Re_ DRAFT comms for goat removal.pdf

From:	Dewey, Sarah
To:	Germann, Denise
Cc:	Simeon Caskey; Jeremy Barnum; David Gustine
Subject:	Re: DRAFT comms for goat removal
Date:	Monday, December 30, 2019 10:19:48 AM
Attachments:	Communications Plan Mtn Goat Removal Draft_30-Dec-19 SRDedits.docx

---

A few additional edits for you using Dave's draft.

Sarah

On Mon, Dec 30, 2019 at 9:03 AM Germann, Denise <denise_germann@nps.gov> wrote:

> See attached and provide comments.
> I'm working from home, and will be in the office about Noonish.
> Thanks.
>
> Denise
>
> Denise Germann
> Public Affairs Officer
> Grand Teton National Park
> 307 739 3393 Office
> 307-690-1752 Cell
> denise_germann@nps.gov

--
Sarah Dewey, Wildlife Biologist
Grand Teton National Park
Science and Resource Management
P.O. Box 170
Moose, WY 83012
(307) 739-3488

Communications Plan Mtn Goat Removal Draft_30_1.pdf

Communications Plan

Grand Teton National Park &
John D. Rockefeller, Jr.
Memorial Parkway

Mountain Goat Removal Operations

January 6th-12th Lethal Removal
Operations Window

December 2019

For Internal Discussion Only
Do Not Distribute

GRTE/JODR - Mountain Goat Removal – January 2020
Communications Plan

This plan establishes a framework for communication with key stakeholders, including park employees and staff, partners, neighbors, elected officials, local community organizations and the general public.

Issue Background

Mountain goats are not native to Grand Teton National Park and the Teton Range. The goat population that currently resides in the Teton Range likely dispersed from a population introduced in the Snake River Range by the Idaho Department of Fish and Game roughly 20 miles south of the Park more than 45 years ago. The population of mountain goats is growing at a rapid rate and beginning to expand into habitats important to a native population of bighorn sheep whose status is very tenuous. Management of mountain goats is needed to address the impacts that mountain goats could impose on natural resources within the park, particularly to the native bighorn sheep population.

In September 2019, the Park released a Finding of No Significant Impact (FONSI) for the Mountain Goat Management Plan, with a decision to rapidly remove non-native mountain goats from the park by lethal and non-lethal methods. Beginning in January 2020, the Park will begin implementing aerial-based lethal removal techniques, using a qualified contractor.

Objectives

This plan is intended to guide strategic communications about nonnative mountain goat removal operations within the park during the January 6–12, 2020, operation window.

The objectives of this plan are to:

- Identify key stakeholders that should be aware of activities being initiated to lethally remove nonnative mountain goats from the park.
- Identify key messages to share with key stakeholders and the public regarding the mountain goat removal operations occurring in the Park, and status of the ~~Bighorn~~ bighorn ~~Sheep~~sheep,
- Identify key tasks and timelines to complete those tasks related to Mountain Goat Removal Operations planned January 6–12, 2020, and
- Identify roles and responsibilities for completing tasks identified on the timeline.

The expected outcomes of this strategic communications plan are:

1. Enhanced public and internal understanding of the threat nonnative mountain goats present to native Teton Range bighorn sheep population;
2. Enhanced public understanding of NPS management policies that support the removal of nonnative mountain goats;
3. Open and transparent communications with the public regarding lethal removal actions and any related impacts to visitors.

Key Messages:

- Mountain goats are not native to Grand Teton National Park., ~~and w~~Without active management the mountain goat population is expected to continue to grow and expand its distribution within the park. ~~and jeopardize a herd of native Teton Range bighorn sheep.~~
- The primary concerns are that non-native mountain goats could transmit pathogens to Teton Range bighorn sheep and/or displace bighorn sheep on very limited winter ranges or optimal summer habitat. These risks are expected to increase if the mountain goat population is not actively managed.
- The rapid reduction of the park's mountain goat population is vital to minimize ~~an~~the existing threats to the native bighorn sheep population from nonnative mountain goats and enhance conservation potential for the bighorn sheep population ~~for the continued existence of the native Teton Range bighorn sheep herd.~~
- The park has a responsibility to protect native species and reduce the potential for local extinction of a native species.
- ~~Action is needed now because a breeding population of nonnative mountain goats is established in the park. The presence of mountain goats presents threats to the already stressed native bighorn sheep herd through increased risk of pathogen transmission and competition.~~
- The mountain goat population is currently estimated at about 100 individuals.~~As of early 2018, the mountain goat population within the park was estimated be around 100 individuals.~~
- The Teton Range is home to a small, native population of bighorn sheep whose status is tenuous. Due in part to its small size, the Teton Range bighorn sheep herd exhibits low genetic diversity and is genetically isolated from neighboring herds.
- ~~Currently the bighorn sheep population is estimated at about 80 individuals. Prior to 2015, the population was estimated to be approximately 100-125 individuals.~~The bighorn sheep population is currently estimated at approximately 100 individuals divided between two genetically distinct segments
- ~~The potential for resource competition and pathogen transmission between mountain goats and bighorn sheep is expected to increase.~~
- The National Park Service completed an environmental assessment (EA) and mountain goat management plan for Grand Teton National Park and the John D. Rockefeller, Jr. Memorial Parkway, including public comment, with a Finding of No Significant Impact (FONSI) issued in September 2019 with a decision to rapidly remove nonnative mountain goats from the park by lethal and non-lethal removal methods.
- Aerially-based lethal activities are the most efficient and effective methods to remove nonnative mountain goats and are planned for implementation in early January 2020.
- Additional removal activities will take place in the fall and next few years.

Talking Points:

- Beginning Monday, January 6 through Saturday, January 11, helicopter-based lethal removal efforts will be initiated to remove nonnative mountain goats located in the park. Aerial operations will be dependent on weather.
- For public and operational safety, a temporary area closure will be implemented during the removal activities. The closure area is bounded on the south by South, Middle and Grand Tetons, Mount Owen and Teewinot Mountain peaks; bounded on the west by the park boundary; bounded on the east by the western shores of Jackson, Leigh, String and Jenny Lakes; and bounded on the north by Rolling Thunder Mountain and Eagle Rest Peaks.
- Lethal removal activities will be performed by ~~federal~~ contractors with appropriate training, certifications, and skills in aviation operations and safe use of firearm protocols.
- During aerial-based lethal removal activities, mountain goat carcasses will primarily be allowed to remain on the landscape ~~for~~ to provide biological and ecological benefits. Some carcasses may be recovered, if conditions safely allow, and used for scientific, cultural, or subsistence purposes.
- ~~The California Department of Fish and Game has a research permit……???~~Currently, in a partnership with the California Department of Fish and Game (T. Stephenson), recovered carcasses will be used to improve the understanding and measurement of body condition in populations of wild mountain goats.~~?~~
- The park is developing a skilled volunteers to assist in rapid removal of mountain goats while minimizing effects to native resources and other park visitors. ~~**skilled volunteer program.**~~
- ~~An~~ Dependent on the effectiveness of this first removal effort, an additional helicopter-based lethal removal effort may take place prior to the end of March 2020.

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Commented [DSR1]: Map is available

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Commented [DSR2]: The research permit portal was having problems over the weekend so the researcher was unable to submit the application. Hopefully it will be back up and running today. I have reached out to Tom to see how he how he would like us to reference his work. I will insert that info as soon as I get it.

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Timeline

Task	Primary Responsibility	Date to Complete/Implement
Draft Comms Plan	Denise Germann	December 23
Begin informing key contacts	Denise/Simeon/Dave (see below)	December 23
Confirm weather/operations window and contractor arrival	Sarah Dewey	December 31
Media Release and Media outreach	Denise Germann	January 2
Contractor Arrives	Sarah Dewey/Teton Helitack	January 5
Lethal Removal Implementation Begins	Dave Gustine/Sarah Dewey	January 6
Lethal Removal Implementation Ends	Dave Gustine/Sarah Dewey	January 11
Status report on operations	Dave Gustine/Simeon Caskey	Week of January 13

Key Contacts and Communication Tools to Share Information

Key Contact	Contact Info	Staff Assigned	Notification Tool	Due Date
Senior Leadership Team		Simeon Caskey Denise Germann	SWN SLT Meeting Email message, media release, FAQs	
Permanent and Seasonal Employees, Volunteers	GRTE_All_Employees@nps.gov GRTE_Seasonal_Employees@nps.gov	Denise Germann	Email message, Media Release, FAQs	
IMR Regional Office – Key Contacts	Resources RD Office/Comms	Simeon Caskey Denise Germann	Phone Call Email, media release	
WASO/DOI Key Contacts	Comms Resources	Jeremy Barnum Denise Germann		
GRTE Concessioners/CUA Holders	Exum, others directly impacted by closures- awareness for all	Mallory Smith-acting? Denise Germann Michael Nash	Phone Call, Email, Media release	
Media/General public/planning contacts		Denise Germann	Media release, social media posts	Jan 2

Bridger-Teton National Forest	Forest Supervisor District Ranger Mary Moore PAO Mary Cernacek Wildlife Biologist	Denise Germann Simeon Caskey	Phone call, media release	
Caribou-Targee National Forest	District Ranger Jay Pence	Simeon Caskey	Email, phone call	
Wyoming Game and Fish Jackson Office and Cheyenne Office	Brad Hovinga, Jackson Regional Supervisor 307-733-2321 Mark Goeke	Simeon Caskey Dave Gustine Denise Germann	Phone call Letter Requesting EA Comments	Complete 12/23/19
WY GF Commissioner Mike Schmidt		Simeon Caskey Dave Gustine	Phone call, media release	Completed in person (D. Gustine) on 12/17/19
Idaho Fish and Game	Curtis Hendricks, Regional Wildlife Manager 208-821-4250	Dave Gustine Denise Germann	Phone Call Letter Requesting EA Comments	Complete 12/23/19
Native American Tribes	Consultation EA Comments	Simeon Caskey	Meeting, Media Release	
US Fish and Wildlife Service	Cris Dippel, Acting Refuge Manager 307-203-6798 (cell)	Dave Gustine Denise Germann	Phone call, email, media release	Complete 12/23/19
Elected Officials Senator Barrasso- Pam Senator Enzi- Niki Representative Cheney- Lindy Teton County Commissioners- Chair Newcomb WY Governor's Office- Chris Mickey		Denise Germann	Media release Phone Call	
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Greater Yellowstone Coalition		Denise Germann	Media Release	
Greater Yellowstone Coordinating Committee- David Diamond		Denise Germann	Phone Call Media Release	
Wyoming Wildlife Foundation		Simeon Caskey		
Jackson Hole Conservation Alliance		Simeon Caskey		

Previous Commenters		Denise Germann	Email Media Release	

Mntn Goats.pdf

From:	Tozier, Katie
To:	Jeremy Barnum
Subject:	Mntn Goats
Date:	Wednesday, January 8, 2020 8:11:46 AM
Attachments:	GRTE Mountain Goats.pdf Briefing Statement, Mountain Goat Management Plan.July 15, 2019.docx REVISED DRAFT Briefing Statement, Mountain Goat Management Plan.July 2019.docx

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W:\MGT\Management\ADMIN\Briefing Statements\2019 Briefing Statements

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Katie Tozier
Office of the Superintendent
Grand Teton National Park
307.739.3410

GRTE Mountain Goats_1.pdf

Briefing Statement July 2019

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton NP (GRTE) and the John D. Rockefeller, Jr. Memorial Parkway (JODR), and threaten the small and declining native bighorn sheep herd and other animal and plant resources in the Teton Range.
- The NPS is developing a management plan to remove or significantly reduce the mountain goats in the next one to five years, which could be controversial. It includes the use of aerial control and potentially use of skilled volunteers to lethally remove mountain goats from the park. Managers that cost-effective removal of nonnative goats can be done within three to five years if action is promptly initiated.

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development. In recent years, sheep have declined; a December 2018 count found 82 bighorns.
- Mountain goats were first seen in the Teton Range in 1979 but only in recent years have biologists documented a rapidly increasing breeding population. Without intervention, scientists predict that the goat population could grow to 2.5-5 times the current number of approximately 100 goats.
- Mountain goats could introduce diseases to the native Teton bighorn herd. Goats in other ecosystems have also caused the decline or extirpation of native high-elevation plant populations.

Current Status:

- The NPS prepared a draft mountain goat management plan/EA that outlined strategies to significantly reduce or remove mountain goats from the Tetons, using NPS staff and skilled contractors, primarily through lethal means. Translocations of goats back into native ranges would be an option.
- Idaho and Wyoming maintain goats as a game species in other areas. The park received requests from the Wyoming Game & Fish Commission and Department and some members of the public to consider using skilled volunteers to assist in goat removal. This has been added as a management option.
- Goats are widely dispersed in high-elevation backcountry areas of the park and seldom seen by park visitors. Their potential removal would be logistically challenging and may become controversial; however, there is high interest among state and federal biologists and local constituents in conserving the native bighorn sheep herd in the Teton Range.

Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: July 15, 2019

Briefing Statement, Mountain Goat Management _1.pdf

Briefing Statement July 2019

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton NP (GRTE) and the John D. Rockefeller, Jr. Memorial Parkway (JODR), and threaten the small and declining native bighorn sheep herd and other animal and plant resources in the Teton Range.
- The NPS is developing a management plan to remove or significantly reduce the mountain goats in the next one to five years, which could be controversial. It includes the use of aerial control and potentially use of skilled volunteers to lethally remove mountain goats from the park. Managers that cost-effective removal of nonnative goats can be done within three to five years if action is promptly initiated.

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development. In recent years, sheep have declined; a December 2018 count found 82 bighorns.
- Mountain goats were first seen in the Teton Range in 1979 but only in recent years have biologists documented a rapidly increasing breeding population. Without intervention, scientists predict that the goat population could grow to 2.5-5 times the current number of approximately 100 goats.
- Mountain goats could introduce diseases to the native Teton bighorn herd. Goats in other ecosystems have also caused the decline or extirpation of native high-elevation plant populations.

Current Status:

- The NPS prepared a draft mountain goat management plan/EA that outlined strategies to significantly reduce or remove mountain goats from the Tetons, using NPS staff and skilled contractors, primarily through lethal means. Translocations of goats back into native ranges would be an option.
- Idaho and Wyoming maintain goats as a game species in other areas. The park received requests from the Wyoming Game & Fish Commission and Department and some members of the public to consider using skilled volunteers to assist in goat removal. This has been added as a management option.
- Goats are widely dispersed in high-elevation backcountry areas of the park and seldom seen by park visitors. Their potential removal would be logistically challenging and may become controversial; however, there is high interest among state and federal biologists and local constituents in conserving the native bighorn sheep herd in the Teton Range.

Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: July 15, 2019

REVISED DRAFT Briefing Statement, Mountain Go_8.pdf

Briefing Statement - Grand Teton National Park
Bureau: NPS
Issue: Mountain Goat Management Plan
Date: REVISED DRAFT June 2019

Key Points:

- Non-native mountain goats are increasing in Grand Teton NP (GRTE) and the John D. Rockefeller, Jr. Memorial Parkway (JODR), and threaten the small and declining native bighorn sheep herd and other animal and plant resources in the Teton Range.
- The NPS is developing a management plan to remove or significantly reduce the mountain goats in the next one to five years, which could be controversial. It includes the use of aerial control and potential use of skilled volunteers to lethally remove mountain goats from the park.

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development. In recent years, sheep have declined to less than 100 animals.
- Mountain goats were first seen in the Teton Range in 1979 but only in recent years have biologists documented evidence of a rapidly increasing breeding population. Without intervention, scientists predict that the goat population could grow to 2.5-5 times current numbers. Goats now likely outnumber the small native Teton bighorn sheep population.
- Mountain goats could introduce diseases to the native Teton bighorn herd. Goats in other ecosystems have also caused the decline or extirpation of native high-elevation plant populations.

Current Status:

- The NPS prepared a draft mountain goat management plan/EA that outlined strategies to significantly reduce or remove mountain goats from the Tetons, using NPS staff and skilled contractors, primarily through lethal means. Translocations of goats back into native ranges would be an option. Biologists believe that removal of this goat population can be done one to five years if prompt action is taken.

- Goats are widely dispersed in high-elevation backcountry areas of the park and seldom seen by park visitors. Their potential removal would be logistically challenging and may become controversial; however, there is high interest among state and federal biologists and local constituents in conserving the native bighorn sheep herd in the Teton Range.

- Idaho and Wyoming maintain goats as a game species in other areas. The park received requests from the Wyoming Game & Fish Commission and Department and some members of the public to consider using skilled volunteers to assist in goat removal. This has been added as a management option.

Interested Parties:

- Governor of Wyoming; local communities; Wyoming congressional delegation. WY Game &Fish Department and Commission; Idaho Department of Fish and Game; Yellowstone NP, the Bridger-Teton and Caribou-Targhee National Forests; sportsmen's groups; Jackson Hole Conservation Alliance, NPCA, Greater Yellowstone Coalition and other environmental groups; Jackson and Teton County; regional Native American Indian tribes.

Contact:

- Gopaul Noojibail, Acting Superintendent, 307-739-3410

Quick Review Please_ Updated Mountain Goat Brie....pdf

From:	Barnum, Jeremy
To:	Gopaul Noojibail; Victoria Mates; Caskey, Simeon; Gustine, David; Sarah Dewey; Denise Germann; Michael Nash
Subject:	Quick Review Please: Updated Mountain Goat Briefing Statement
Date:	Wednesday, January 8, 2020 10:33:05 AM
Attachments:	GRTE UPDATED Briefing Statement, Mountain Goat Management Plan.January 8, 2020.docx

Hi All,

Please take a quick look at the attached/below updated briefing statement on mountain goats that we need to send to the regional director ASAP.

Let me know if you have any questions or concerns.

Best,

Jeremy K. Barnum
Chief of Staff (Acting)
Grand Teton National Park
Desk: (307) 739-3428
Mobile: (202) 617-7973

Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton National Park and the John D. Rockefeller, Jr. Memorial Parkway, and significantly threaten the small and declining native bighorn sheep herd and other animal and plant resources in the Teton Range.
- The NPS finalized a management plan to remove or significantly reduce the mountain goats in the park in the next one to five years. The plan includes the use of aerial control and potentially use of skilled volunteers to lethally remove mountain goats from the park.
- On January 2, 2020, the park announced the first aerial lethal removal operation and related closure, however weather has delayed the beginning of those operations until late January/early February.

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development. In recent years, sheep have declined; a December 2018 count found 82 bighorns.
- Mountain goats were first seen in the Teton Range in 1979 but only in recent years have biologists documented a rapidly increasing breeding population. Without intervention, scientists predict that the goat population could grow to 2.5-5 times the current number of approximately 100 goats. Mountain goats may introduce diseases to the native Teton bighorn herd that could result in their extirpation.

- The NPS finalized the mountain goat management plan/EA in September 2019 that outlined strategies to significantly reduce or remove mountain goats from the Tetons, using NPS staff and skilled contractors, primarily through lethal means. Idaho and Wyoming maintain goats as a game species in other areas. The park received requests from the Wyoming Game & Fish Commission and Department and some members of the public to consider using skilled volunteers to assist in goat removal. This was included as a management option.

- Goats are widely dispersed in high-elevation backcountry areas of the park and seldom seen by park visitors. Their removal will be logistically challenging and may become controversial; however, there is high interest among state and federal biologists and local constituents in conserving the native bighorn sheep herd in the Teton Range.

Current Status:

- The park announced the first aerial lethal removal operation and related closure, however weather has delayed the beginning of those operations until late January/early February.

- The initial planned operation for aerial lethal removal planned to begin on January 6 has been delayed until later in January or early February. The park is also making arrangement to either extend the operation or add a second operation later in February in order to remove as many goats as possible in the most effective manner.

Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 1, 2020

GRTE UPDATED Briefing Statement, Mountain Goa.pdf

Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton National Park and the John D. Rockefeller, Jr. Memorial Parkway, and significantly threaten the small and declining native bighorn sheep herd and other animal and plant resources in the Teton Range.
- The NPS finalized a management plan to remove or significantly reduce the mountain goats in the park in the next one to five years. The plan includes the use of aerial control and potentially use of skilled volunteers to lethally remove mountain goats from the park.
- On January 2, 2020, the park announced the first aerial lethal removal operation and related closure, however weather has delayed the beginning of those operations until late January/early February.

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development. In recent years, sheep have declined; a December 2018 count found 82 bighorns.
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- The NPS finalized the mountain goat management plan/EA in September 2019 that outlined strategies to significantly reduce or remove mountain goats from the Tetons, using NPS staff and skilled contractors, primarily through lethal means. Idaho and Wyoming maintain goats as a game species in other areas. The park received requests from the Wyoming Game & Fish Commission and Department and some members of the public to consider using skilled volunteers to assist in goat removal. This was included as a management option.
- Goats are widely dispersed in high-elevation backcountry areas of the park and seldom seen by park visitors. Their removal will be logistically challenging and may become controversial; however, there is high interest among state and federal biologists and local constituents in conserving the native bighorn sheep herd in the Teton Range.

Current Status:

- The park announced the first aerial lethal removal operation and related closure, however weather has delayed the beginning of those operations until late January/early February.
- The initial planned operation for aerial lethal removal planned to begin on January 6 has been delayed until later in January or early February. The park is also making arrangement to either extend the operation or add a second operation later in February in order to remove as many goats as possible in the most effective manner.

Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 1, 2020

Re_ [EXTERNAL] Mountain Goats (not) in Grand Teton.pdf

From:	Barnum, Jeremy
To:	De Leon, Marco
Cc:	Roche, Michael; Tozier, Katie; Gopaul Noojibail; Michael Reynolds; Katharine Hammond; Sharla Bailey; Victoria Mates; Denise Germann
Subject:	Re: [EXTERNAL] Mountain Goats (not) in Grand Teton
Date:	Wednesday, January 8, 2020 11:57:15 AM
Attachments:	GRTE UPDATED Briefing Statement, Mountain Goat Management Plan.January 8, 2020.docx

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Kate and Mike,

Please see attached the updated briefing statement on Grand Teton's Mountain Goat Management Plan in advance of the conversation with Mike this afternoon.

Best,

Jeremy K. Barnum
Chief of Staff (Acting)
Grand Teton National Park
Desk: (307) 739-3428
Mobile: (202) 617-7973

On Wed, Jan 8, 2020 at 9:28 AM De Leon, Marco <marco_deleon@nps.gov> wrote:

> Looping Denise Germann
> --
> Marco I. De Leon
> Chief, Public Affairs
> Interior Regions 6,7,8
> National Park Service
> (303) 969-2321
>
> On Wed, Jan 8, 2020 at 8:32 AM Roche, Michael <michael_roche@nps.gov> wrote:
>
> > Hey Katie,
> >
> > Mike is available after 3pm today. Otherwise during your selected times, he is busy.
> >
> > Hope this helps
> >
> > Mike
> >
> > On Wed, Jan 8, 2020 at 8:11 AM Tozier, Katie <katie_tozier@nps.gov> wrote:
> >
> > > Good morning,
> > >
> > > We have the following availability today:
> > >
> > > 11:00 am - 12:00 pm MST
> > > 2:30 pm - 3:30 pm MST
> > >
> > > We can also move things around between 1:00 and 2:30 pm, as needed.

Keep me posted. Thank you!

Katie

On Wed, Jan 8, 2020 at 6:59 AM Gopaul Noojibail <gopaul_noojibail@nps.gov> wrote:

Not a problem Mike- Katie Tozier here will coordinate with your team.

Gopaul Noojibail
Superintendent (acting)
Grand Teton National Park
John D. Rockefeller Memorial Parkway
(307) 739-3411

On Jan 8, 2020, at 6:49 AM, Michael Reynolds <michael_reynolds@nps.gov> wrote:

Gopaul

Let's chat this afternoon or tomorrow on this if we can. Thx. Let Mike or Sharla know a good time. Thank you.

Sent from my iPhone

Begin forwarded message:

From: Connie and Gary T (b) (6) [redacted] @hotmail.com>
Date: January 7, 2020 at 10:50:18 PM MST
To: "david_vela@nps.gov" <david_vela@nps.gov>, "Chip_Jenkins@nps.gov" <Chip_Jenkins@nps.gov>, "Michael_Reynolds@nps.gov" <Michael_Reynolds@nps.gov>, "Sarah_Dewey@nps.gov" <Sarah_Dewey@nps.gov>, "eric_cole@fws.gov" <eric_cole@fws.gov>, "Gopaul_Noojibail@nps.gov" <Gopaul_Noojibail@nps.gov>, "Karen_Taylor-Goodrich@nps.gov" <Karen_Taylor-Goodrich@nps.gov>, "Dan_Stahler@nps.gov" <Dan_Stahler@nps.gov>, "tyler_abbott@fws.gov" <tyler_abbott@fws.gov>, "nathan_darnall@fws.gov" <nathan_darnall@fws.gov>, "scott_becker@fws.gov" <scott_becker@fws.gov>, "Erin_Stahler@nps.gov" <Erin_Stahler@nps.gov>, "katharine_macgregor@ios.doi.gov" <katharine_macgregor@ios.doi.gov>, "stephen_guertin@fws.gov" <stephen_guertin@fws.gov>, "bryan_arroyo@fws.gov" <bryan_arroyo@fws.gov>, "Noreen_Walsh@fws.gov" <Noreen_Walsh@fws.gov>
Cc: "Lloyd.Larsen@wyoleg.gov"

<Lloyd.Larsen@wyoleg.gov>, "Tim.Salazar@wyoleg.gov" <Tim.Salazar@wyoleg.gov>, "David.Miller@wyoleg.gov" <David.Miller@wyoleg.gov>
Subject: [EXTERNAL] Mountain Goats (not) in Grand Teton

To the DOI, FWS,NPS,

I am dismayed that a government agency is shooting 100 Mountain Goats from aircraft. It is wrong on so many levels, the first one being that Wyoming has game laws against shooting big game animals from aircraft and wanton destruction. There are reasons these laws were made, and ethical citizens follow them.

I have read the Grand Teton EA of this action and they have no compelling reasons for this action, and they contradict themselves about the carrying capacity of the habitat. Do they really know that the Mountain Goats are the sole cause of the Bighorn Sheep decline? This is a big rush to judgement. The decline of the Whiskey Mountain Bighorn Sheep herd, which is less than 100 miles from Grand Teton park, is now believed by researchers to be a combination of factors, after much study. What combination of factors is affecting the Grand Teton Bighorn Sheep?

The dramatic increase in people in the backcountry in Grand Teton park surely affects the Bighorn Sheep population by redistributing where they would ordinarily choose to go, eliminating fragile plants in alpine soil, etc. There are people in every nook and cranny of those mountains, every season of the year. What are you doing to address those stresses on the native Bighorn Sheep?

The Park Service's main reason for this eradication of Mountain Goats seems to be that they are non-native. The wolves we currently have here are a non-native species to this area, and I seem to remember that they were even purposely introduced into the local ecosystem. Kind of like someone introduced Mountain Goats on the other side of the Tetons years ago? That wolf population is now

distributed throughout and beyond the Greater Yellowstone Ecosystem, no doubt preying on those native Bighorn Sheep.

If for a good reason, a population of game animals has to be removed, I see no reason that if you were so motivated you couldn't find places that would like to take transplanted Mountain Goats. Mountain Goats are decreasing in many areas where they were native. If you transplanted the Teton Mountain Goats other populations could benefit from the introduced genetic diversity. They could be ethically hunted - not be run and gunned down by someone in a helicopter and left to rot.

Costs too much? How much are you paying for the aircraft company you're hiring? Seems we have the money to relocate grizzly bears all the time. At least the bears get to have a third chance, unlike these Goats.

Surely you could have come up with a more ethical solution.

Sincerely,

Connie Ticknor
Dubois, Wy

--
Katie Tozier
Office of the Superintendent
Grand Teton National Park
307.739.3410

--
Very Respectfully,
Mike Roche
Executive Assistant

Region 6, 7, & 8
Regional Director's office
National Park Service
12795 W Alameda Parkway
Lakewood CO 80228
Office: (303) 969-2500
Fax: (303) 969-2785

GRTE UPDATED Briefing Statement, Mountain Goa_1.pdf

Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton National Park and the John D. Rockefeller, Jr. Memorial Parkway, and threaten the small and isolated native bighorn sheep population and other animal and plant resources in the Teton Range.
- The NPS finalized the Mountain Goat Management Plan (Sep 2019) to remove, or significantly reduce, mountain goats in the park in the next one to five years. The plan includes the use of aerial control and potentially skilled volunteers to lethally, and non-lethally, remove mountain goats from the park.
- On January 2, 2020, the park announced the first aerial lethal removal operation and related safety closure; however, weather has delayed the beginning of those operations until late January/early February.

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development.Currently, the population is estimated at about 100 individuals.
- Mountain goats were first seen in the Teton Range in 1979 but only in recent years have biologists documented a rapidly increasing breeding population. Recent modeling predicts the amount of suitable habitat in the Tetons could support 4 times the number of goats currently present (~100). Without intervention, non-native mountain goats could transmit pathogens and compete with, or displace Teton bighorn sheep on very limited winter ranges and optimal summer habitat. Snake River Range mountain goats, the likely source of Teton mountain goats, test positive for a suite of pathogens that is highly likely to lead to pneumonia if transmitted to the Teton Range bighorn sheep population.
- The Mountain Goat Management Plan outlines strategies to significantly reduce or remove mountain goats from the Tetons, using NPS staff and skilled contractors, primarily through lethal means. In response to requests from the Wyoming Game & Fish Commission and Department and some members of the public, the use of skilled volunteers to assist in goat removal was included as a management option.
- Goats are widely dispersed in high-elevation backcountry areas of the park and seldom seen by park visitors. Their removal will be logistically challenging and may become controversial; however, there is high interest among state and federal biologists and local constituents in conserving the native bighorn sheep herd in the Teton Range.

Current Status:

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- The announcement of the operation and closure was picked up by most local and regional media outlets. There has been overall public support for the removal of mountain goats to protect the bighorn sheep population. The park has received a few dozen negative comments from members of the public but has not heard new feedback from major stakeholders who were consulted during the development of the plan.

Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 8, 2020

Re_ Quick Review Please_ Updated Mountain Goat ...(2).pdf

From: Barnum, Jeremy
To: Dewey, Sarah
Cc: Caskey, Simeon; Gustine, David; Denise Germann
Subject: Re: Quick Review Please: Updated Mountain Goat Briefing Statement
Date: Wednesday, January 8, 2020 1:33:57 PM

Thanks, Sarah. We incorporated your edits and we sent up to the RD who appreciated the info and no longer needs a phone call to discuss.

Jeremy K. Barnum
Chief of Staff (Acting)
Grand Teton National Park
Desk: (307) 739-3428
Mobile: (202) 617-7973

On Wed, Jan 8, 2020 at 11:00 AM Dewey, Sarah <sarah_dewey@nps.gov> wrote:

> Hi Jeremy,
>
> I shared a Google doc with you with a few suggested edits. Let me know if you have any questions. Thanks.
>
> Sarah
>
> On Wed, Jan 8, 2020 at 10:32 AM Barnum, Jeremy <jeremy_barnum@nps.gov> wrote:
>
> > Hi All,
> >
> > Please take a quick look at the attached/below updated briefing statement on mountain goats that we need to send to the regional director ASAP.
> >
> > Let me know if you have any questions or concerns.
> >
> > Best,
> >
> > Jeremy K. Barnum
> > Chief of Staff (Acting)
> > Grand Teton National Park
> > Desk: (307) 739-3428
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> >
> > **Briefing Statement January 2020**
> >
> > **Bureau:** National Park Service
> > **Issue:** Mountain Goat Management Plan
> > **Members:** Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
> > **Park:** Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway
> >
> > **Key Points:**
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- Mountain goats were first seen in the Teton Range in 1979 but only in recent years have biologists documented a rapidly increasing breeding population. Without intervention, scientists predict that the goat population could grow to 2.5-5 times the current number of approximately 100 goats. Mountain goats may introduce diseases to the native Teton bighorn herd that could result in their extirpation.

- The NPS finalized the mountain goat management plan/EA in September 2019 that outlined strategies to significantly reduce or remove mountain goats from the Tetons, using NPS staff and skilled contractors, primarily through lethal means. Idaho and Wyoming maintain goats as a game species in other areas. The park received requests from the Wyoming Game & Fish Commission and Department and some members of the public to consider using skilled volunteers to assist in goat removal. This was included as a management option.

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Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 1, 2020

--
Sarah Dewey, Wildlife Biologist
Grand Teton National Park
Science and Resource Management
P.O. Box 170
Moose, WY 83012
(307) 739-3488

Re_ Quick Review Please_ Updated Mountain Goat ...(1).pdf

From: Gopaul Noojibail
To: Dewey, Sarah
Cc: Barnum, Jeremy; Victoria Mates; Caskey, Simeon; Gustine, David; Denise Germann; Michael Nash
Subject: Re: Quick Review Please: Updated Mountain Goat Briefing Statement
Date: Wednesday, January 8, 2020 5:42:24 PM

Great comments Sarah. Thank you.

Gopaul Noojibail
Superintendent (acting)
Grand Teton National Park
John D. Rockefeller Memorial Parkway
(307) 739-3411

On Jan 8, 2020, at 10:59 AM, Dewey, Sarah <sarah_dewey@nps.gov> wrote:

Hi Jeremy,

I shared a Google doc with you with a few suggested edits. Let me know if you have any questions. Thanks.

Sarah

On Wed, Jan 8, 2020 at 10:32 AM Barnum, Jeremy <jeremy_barnum@nps.gov> wrote:

Hi All,

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Let me know if you have any questions or concerns.

Best,

Jeremy K. Barnum
Chief of Staff (Acting)
Grand Teton National Park
Desk: (307) 739-3428
Mobile: (202) 617-7973

Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
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Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 1, 2020

--
Sarah Dewey, Wildlife Biologist
Grand Teton National Park
Science and Resource Management
P.O. Box 170
Moose, WY 83012
(307) 739-3488

Re_ Quick Review Please_ Updated Mountain Goat ....pdf

From: Nash, Michael
To: Barnum, Jeremy
Subject: Re: Quick Review Please: Updated Mountain Goat Briefing Statement
Date: Wednesday, January 8, 2020 9:02:48 PM

---

the key point bullet 3 and current status are slightly repetitive for what it is worth. There is no explanation of why we are try ing to get this done "now" - low tourism, early winter before sheep are calving and not stressed out later in the winter and that the habitats are shared by the two species.
looks good...sorry if I am too late.

Michael A. Nash
Chief Park Ranger
Grand Teton National Park

On Wed, Jan 8, 2020 at 10:32 AM Barnum, Jeremy <jeremy_barnum@nps.gov> wrote:

Hi All,

Please take a quick look at the attached/below updated briefing statement on mountain goats that we need to send to the regional director ASAP.

Let me know if you have any questions or concerns.

Best,

Jeremy K. Barnum
Chief of Staff (Acting)
Grand Teton National Park
Desk: (307) 739-3428
Mobile: (202) 617-7973

Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

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Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 1, 2020

Fwd_ [EXTERNAL] Mountain Goats (not) in Grand T...(1).pdf

From:	Barnum, Jeremy
To:	Ray Sauvajot; Jennifer Wyse
Subject:	Fwd: [EXTERNAL] Mountain Goats (not) in Grand Teton
Date:	Monday, January 13, 2020 2:41:02 PM
Attachments:	GRTE UPDATED Briefing Statement, Mountain Goat Management Plan.January 8, 2020.docx

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FYI

Jeremy K. Barnum
Chief of Staff (Acting)
Grand Teton National Park
Desk: (307) 739-3428
Mobile: (202) 617-7973

---------- Forwarded message ---------
From: **Barnum, Jeremy** <jeremy_barnum@nps.gov>
Date: Wed, Jan 8, 2020 at 11:56 AM
Subject: Re: [EXTERNAL] Mountain Goats (not) in Grand Teton
To: De Leon, Marco <marco_deleon@nps.gov>
Cc: Roche, Michael <michael_roche@nps.gov>, Tozier, Katie <katie_tozier@nps.gov>, Gopaul Noojibail <gopaul_noojibail@nps.gov>, Michael Reynolds <michael_reynolds@nps.gov>, Katharine Hammond <kate_hammond@nps.gov>, Sharla Bailey <sharla_bailey@nps.gov>, Victoria Mates <victoria_mates@nps.gov>, Denise Germann <denise_germann@nps.gov>

Kate and Mike,

Please see attached the updated briefing statement on Grand Teton's Mountain Goat Management Plan in advance of the conversation with Mike this afternoon.

Best,

Jeremy K. Barnum
Chief of Staff (Acting)
Grand Teton National Park
Desk: (307) 739-3428
Mobile: (202) 617-7973

On Wed, Jan 8, 2020 at 9:28 AM De Leon, Marco <marco_deleon@nps.gov> wrote:

> Looping Denise Germann
> --
> Marco I. De Leon
> Chief, Public Affairs
> Interior Regions 6,7,8

National Park Service
(303) 969-2321

On Wed, Jan 8, 2020 at 8:32 AM Roche, Michael <michael_roche@nps.gov> wrote:

Hey Katie,

Mike is available after 3pm today. Otherwise during your selected times, he is busy.

Hope this helps

Mike

On Wed, Jan 8, 2020 at 8:11 AM Tozier, Katie <katie_tozier@nps.gov> wrote:

Good morning,

We have the following availability today:

11:00 am - 12:00 pm MST
2:30 pm - 3:30 pm MST

We can also move things around between 1:00 and 2:30 pm, as needed.

Keep me posted. Thank you!

Katie

On Wed, Jan 8, 2020 at 6:59 AM Gopaul Noojibail <gopaul_noojibail@nps.gov> wrote:

Not a problem Mike- Katie Tozier here will coordinate with your team.

Gopaul Noojibail
Superintendent (acting)
Grand Teton National Park
John D. Rockefeller Memorial Parkway
(307) 739-3411

On Jan 8, 2020, at 6:49 AM, Michael Reynolds <michael_reynolds@nps.gov> wrote:

Gopaul

Let's chat this afternoon or tomorrow on this if we can. Thx. Let Mike or Sharla know a good time. Thank you.

Sent from my iPhone

Begin forwarded message:

From: Connie and Gary T (b) (6) [redacted] @hotmail.com>
Date: January 7, 2020 at 10:50:18 PM MST
To: "david_vela@nps.gov" <david_vela@nps.gov>, "Chip_Jenkins@nps.gov" <Chip_Jenkins@nps.gov>, "Michael_Reynolds@nps.gov" <Michael_Reynolds@nps.gov>, "Sarah_Dewey@nps.gov" <Sarah_Dewey@nps.gov>, "eric_cole@fws.gov" <eric_cole@fws.gov>, "Gopaul_Noojibail@nps.gov" <Gopaul_Noojibail@nps.gov>, "Karen_Taylor-Goodrich@nps.gov" <Karen_Taylor-Goodrich@nps.gov>, "Dan_Stahler@nps.gov" <Dan_Stahler@nps.gov>, "tyler_abbott@fws.gov" <tyler_abbott@fws.gov>, "nathan_darnall@fws.gov" <nathan_darnall@fws.gov>, "scott_becker@fws.gov" <scott_becker@fws.gov>, "Erin_Stahler@nps.gov" <Erin_Stahler@nps.gov>, "katharine_macgregor@ios.doi.gov" <katharine_macgregor@ios.doi.gov>, "stephen_guertin@fws.gov" <stephen_guertin@fws.gov>, "bryan_arroyo@fws.gov" <bryan_arroyo@fws.gov>, "Noreen_Walsh@fws.gov" <Noreen_Walsh@fws.gov>
Cc: "Lloyd.Larsen@wyoleg.gov" <Lloyd.Larsen@wyoleg.gov>, "Tim.Salazar@wyoleg.gov" <Tim.Salazar@wyoleg.gov>, "David.Miller@wyoleg.gov" <David.Miller@wyoleg.gov>
Subject: [EXTERNAL] Mountain Goats (not) in Grand Teton

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Dubois, Wy

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Office of the Superintendent
Grand Teton National Park
307.739.3410

--
Very Respectfully,
Mike Roche
Executive Assistant
Region 6, 7, & 8
Regional Director's office
National Park Service
12795 W Alameda Parkway
Lakewood CO 80228
Office: (303) 969-2500
Fax: (303) 969-2785

GRTE UPDATED Briefing Statement, Mountain Goa_2.pdf

Briefing Statement January 2020

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Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 8, 2020

Fwd_ [EXTERNAL] Mountain Goats (not) in Grand T....pdf

From:	Jeremy Barnum
To:	Denise Germann
Subject:	Fwd: [EXTERNAL] Mountain Goats (not) in Grand Teton
Date:	Tuesday, January 14, 2020 10:37:06 AM
Attachments:	ATT00001.htm GRTE UPDATED Briefing Statement, Mountain Goat Management Plan.January 8, 2020.docx

---

Jeremy K. Barnum
Chief of Staff (Acting)
Grand Teton National Park
Desk: (307) 393-3428
Mobile: (202) 617-7973

Begin forwarded message:

From: "Barnum, Jeremy" <jeremy_barnum@nps.gov>
Date: January 13, 2020 at 2:40:27 PM MST
To: Ray Sauvajot <ray_sauvajot@nps.gov>, Jennifer Wyse <jennifer_wyse@nps.gov>
Subject: Fwd: [EXTERNAL] Mountain Goats (not) in Grand Teton

FYI

Jeremy K. Barnum
Chief of Staff (Acting)
Grand Teton National Park
Desk: (307) 739-3428
Mobile: (202) 617-7973

---------- Forwarded message ---------
From: **Barnum, Jeremy** <jeremy_barnum@nps.gov>
Date: Wed, Jan 8, 2020 at 11:56 AM
Subject: Re: [EXTERNAL] Mountain Goats (not) in Grand Teton
To: De Leon, Marco <marco_deleon@nps.gov>
Cc: Roche, Michael <michael_roche@nps.gov>, Tozier, Katie <katie_tozier@nps.gov>, Gopaul Noojibail <gopaul_noojibail@nps.gov>, Michael Reynolds <michael_reynolds@nps.gov>, Katharine Hammond <kate_hammond@nps.gov>, Sharla Bailey <sharla_bailey@nps.gov>, Victoria Mates <victoria_mates@nps.gov>, Denise Germann <denise_germann@nps.gov>

Kate and Mike,

Please see attached the updated briefing statement on Grand Teton's Mountain Goat Management Plan in advance of the conversation with Mike this afternoon.

Best,

Jeremy K. Barnum
Chief of Staff (Acting)
Grand Teton National Park
Desk: (307) 739-3428
Mobile: (202) 617-7973

On Wed, Jan 8, 2020 at 9:28 AM De Leon, Marco <marco_deleon@nps.gov> wrote:

> Looping Denise Germann
> --
> Marco I. De Leon
> Chief, Public Affairs
> Interior Regions 6,7,8
> National Park Service
> (303) 969-2321
>
> On Wed, Jan 8, 2020 at 8:32 AM Roche, Michael <michael_roche@nps.gov> wrote:
>
> > Hey Katie,
> >
> > Mike is available after 3pm today. Otherwise during your selected times, he is busy.
> >
> > Hope this helps
> >
> > Mike
> >
> > On Wed, Jan 8, 2020 at 8:11 AM Tozier, Katie <katie_tozier@nps.gov> wrote:
> >
> > > Good morning,
> > >
> > > We have the following availability today:
> > >
> > > 11:00 am - 12:00 pm MST
> > > 2:30 pm - 3:30 pm MST
> > >
> > > We can also move things around between 1:00 and 2:30 pm, as needed.
> > >
> > > Keep me posted. Thank you!
> > >
> > > Katie

(b)(6)

On Wed, Jan 8, 2020 at 6:59 AM Gopaul Noojibail <gopaul_noojibail@nps.gov> wrote:

Not a problem Mike- Katie Tozier here will coordinate with your team.

Gopaul Noojibail
Superintendent (acting)
Grand Teton National Park
John D. Rockefeller Memorial Parkway
(307) 739-3411

On Jan 8, 2020, at 6:49 AM, Michael Reynolds <michael_reynolds@nps.gov> wrote:

Gopaul

Let's chat this afternoon or tomorrow on this if we can. Thx.
Let Mike or Sharla know a good time. Thank you.

Sent from my iPhone

Begin forwarded message:

From: Connie and Gary T <(b) (6) [redacted] @hotmail.com>
Date: January 7, 2020 at 10:50:18 PM MST
To: "david_vela@nps.gov" <david_vela@nps.gov>, "Chip_Jenkins@nps.gov" <Chip_Jenkins@nps.gov>, "Michael_Reynolds@nps.gov" <Michael_Reynolds@nps.gov>, "Sarah_Dewey@nps.gov" <Sarah_Dewey@nps.gov>, "eric_cole@fws.gov" <eric_cole@fws.gov>, "Gopaul_Noojibail@nps.gov" <Gopaul_Noojibail@nps.gov>, "Karen_Taylor-Goodrich@nps.gov" <Karen_Taylor-Goodrich@nps.gov>, "Dan_Stahler@nps.gov" <Dan_Stahler@nps.gov>, "tyler_abbott@fws.gov" <tyler_abbott@fws.gov>, "nathan_darnall@fws.gov" <nathan_darnall@fws.gov>, "scott_becker@fws.gov" <scott_becker@fws.gov>, "Erin_Stahler@nps.gov"

<Erin_Stahler@nps.gov>,
"katharine_macgregor@ios.doi.gov"
<katharine_macgregor@ios.doi.gov>,
"stephen_guertin@fws.gov"
<stephen_guertin@fws.gov>,
"bryan_arroyo@fws.gov"
<bryan_arroyo@fws.gov>,
"Noreen_Walsh@fws.gov"
<Noreen_Walsh@fws.gov>
Cc: "Lloyd.Larsen@wyoleg.gov"
<Lloyd.Larsen@wyoleg.gov>,
"Tim.Salazar@wyoleg.gov"
<Tim.Salazar@wyoleg.gov>,
"David.Miller@wyoleg.gov"
<David.Miller@wyoleg.gov>
Subject: [EXTERNAL] Mountain Goats (not) in Grand Teton

To the DOI, FWS,NPS,

I am dismayed that a government agency is shooting 100 Mountain Goats from aircraft. It is wrong on so many levels, the first one being that Wyoming has game laws against shooting big game animals from aircraft and wanton destruction. There are reasons these laws were made, and ethical citizens follow them.

I have read the Grand Teton EA of this action and they have no compelling reasons for this action, and they contradict themselves about the carrying capacity of the habitat. Do they really know that the Mountain Goats are the sole cause of the Bighorn Sheep decline? This is a big rush to judgement. The decline of the Whiskey Mountain Bighorn Sheep herd, which is less than 100 miles from Grand Teton park, is now believed by researchers to be a combination of factors, after much study. What combination of factors is affecting the Grand Teton Bighorn Sheep?

The dramatic increase in people in the

backcountry in Grand Teton park surely affects the Bighorn Sheep population by redistributing where they would ordinarily choose to go, eliminating fragile plants in alpine soil, etc. There are people in every nook and cranny of those mountains, every season of the year. What are you doing to address those stresses on the native Bighorn Sheep?

The Park Service's main reason for this eradication of Mountain Goats seems to be that they are non-native. The wolves we currently have here are a non-native species to this area, and I seem to remember that they were even purposely introduced into the local ecosystem. Kind of like someone introduced Mountain Goats on the other side of the Tetons years ago? That wolf population is now distributed throughout and beyond the Greater Yellowstone Ecosystem, no doubt preying on those native Bighorn Sheep.

If for a good reason, a population of game animals has to be removed, I see no reason that if you were so motivated you couldn't find places that would like to take transplanted Mountain Goats. Mountain Goats are decreasing in many areas where they were native. If you transplanted the Teton Mountain Goats other populations could benefit from the introduced genetic diversity. They could be ethically hunted - not be run and gunned down by someone in a helicopter and left to rot.

Costs too much? How much are you paying for the aircraft company you're hiring? Seems we have the money to relocate grizzly bears all the time. At least the bears get to have a third chance, unlike these Goats.

Surely you could have come up with a more

ethical solution.

Sincerely,

Connie Ticknor
Dubois, Wy

--
Katie Tozier
Office of the Superintendent
Grand Teton National Park
307.739.3410

--
Very Respectfully,
Mike Roche
Executive Assistant
Region 6, 7, & 8
Regional Director's office
National Park Service
12795 W Alameda Parkway
Lakewood CO 80228
Office: (303) 969-2500
Fax: (303) 969-2785

GRTE UPDATED Briefing Statement, Mountain Goa_3.pdf

Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton National Park and the John D. Rockefeller, Jr. Memorial Parkway, and threaten the small and isolated native bighorn sheep population and other animal and plant resources in the Teton Range.
- The NPS finalized the Mountain Goat Management Plan (Sep 2019) to remove, or significantly reduce, mountain goats in the park in the next one to five years. The plan includes the use of aerial control and potentially skilled volunteers to lethally, and non-lethally, remove mountain goats from the park.
- On January 2, 2020, the park announced the first aerial lethal removal operation and related safety closure; however, weather has delayed the beginning of those operations until late January/early February.

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development.Currently, the population is estimated at about 100 individuals.
- Mountain goats were first seen in the Teton Range in 1979 but only in recent years have biologists documented a rapidly increasing breeding population. Recent modeling predicts the amount of suitable habitat in the Tetons could support 4 times the number of goats currently present (~100). Without intervention, non-native mountain goats could transmit pathogens and compete with, or displace Teton bighorn sheep on very limited winter ranges and optimal summer habitat. Snake River Range mountain goats, the likely source of Teton mountain goats, test positive for a suite of pathogens that is highly likely to lead to pneumonia if transmitted to the Teton Range bighorn sheep population.
- The Mountain Goat Management Plan outlines strategies to significantly reduce or remove mountain goats from the Tetons, using NPS staff and skilled contractors, primarily through lethal means. In response to requests from the Wyoming Game & Fish Commission and Department and some members of the public, the use of skilled volunteers to assist in goat removal was included as a management option.
- Goats are widely dispersed in high-elevation backcountry areas of the park and seldom seen by park visitors. Their removal will be logistically challenging and may become controversial; however, there is high interest among state and federal biologists and local constituents in conserving the native bighorn sheep herd in the Teton Range.

Current Status:

- The park announced the first aerial lethal removal operation and related closure on January 2, however weather has delayed the beginning of those operations until late January/early February. The park is also making arrangements to either extend the operation or add a second operation later in February in order to remove as many goats as possible in the most effective manner.
- The announcement of the operation and closure was picked up by most local and regional media outlets. There has been overall public support for the removal of mountain goats to protect the bighorn sheep population. The park has received a few dozen negative comments from members of the public but has not heard new feedback from major stakeholders who were consulted during the development of the plan.

Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 8, 2020

BRD Briefing - Culling w_ Volunteers.pdf

From:	Caskey, Simeon
To:	Gustine, David; Dewey, Sarah
Subject:	BRD Briefing - Culling w/ Volunteers
Date:	Wednesday, January 15, 2020 5:27:47 PM
Attachments:	NPS VIP Culling (2).docx

Hi Dave and Sarah,

Please find attached BRD briefing regarding use of volunteers for wildlife culling in National Parks, from February of 2018. I haven't had a chance to read through this yet, but my understanding in the takeaway is that the NPS has broad and flexible authority to implement culling programs, that has been upheld by at least 2 court cases. Additionally, I'm not sure what aspects of this may be affected by the Dingell Act passage pasted below.

Not time-sensitive, but when you get the opportunity, please review and I'll be curious to hear your thoughts.

Thanks,

```
SEC. 2410. WILDLIFE MANAGEMENT IN PARKS.

    (a) In General.--Chapter 1049 of title 54, United States Code (as
amended by section 2409(a)), is amended by adding at the end the
following:
``Sec. 104909. <<NOTE: 54 USC 104909.>>  Wildlife management in
                      parks

    ``(a) Use of Qualified Volunteers.--If the Secretary determines it
is necessary to reduce the size of a wildlife population on System land
in accordance with applicable law (including regulations), the Secretary
may use qualified volunteers to assist in carrying out wildlife
management on System land.
    ``(b) Requirements for Qualified Volunteers.--Qualified volunteers
providing assistance under subsection (a) shall be subject to--
            ``(1) any training requirements or qualifications
        established by the Secretary; and
            ``(2) any other terms and conditions that the Secretary may
        require.

    ``(c) Donations.--The Secretary may authorize the donation and
distribution of meat from wildlife management activities carried out
under this section, including the donation and distribution to Indian
Tribes, qualified volunteers, food banks, and other organizations that
work to address hunger, in accordance with applicable health guidelines
and such terms and conditions as the Secretary may require.''.
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--

Simeon Caskey
Acting Chief, Science and Resource Management
Grand Teton NP & the John D. Rockefeller, Jr. Memorial Parkway
P.O. Box 170
Moose, WY 83012
(307) 739-3493
simeon_caskey@nps.gov

NPS VIP Culling (2)_1.pdf

February, 2018

On the Use of Public Volunteers to Cull Wildlife in the National Park System

The purpose of this document is to assist and support National Park Service (NPS, Service) managers who are considering implementation of wildlife culling operations where public volunteers will participate in associated stewardship actions. This guide is not meant to prescribe the activities for any specific NPS unit. Instead, it describes the breadth and depth of issues which should be considered and decided upon at the local level. There is no one public volunteer culling model that will fit perfectly for every park. There are, however, lessons learned which may be helpful to other units in the system. Consulting with other NPS managers who have been through this process is strongly encouraged as is partnering with state wildlife management agencies and neighboring land management agencies whenever practical and appropriate.

Backgrou nd

The NPS is unique among federal land management agencies in its mandate regarding hunting. Unlike the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS), NPS lands are closed to hunting, except where it is specifically authorized by Congress. There are approximately 76 (of 417) NPS units open to hunting, most of which are named as National Preserves, National Seashores, or National Recreation Areas. None of the units named as National Parks have public hunting (though one, Grand Teton National Park, has a statutorily mandated elk reduction program that temporarily deputizes state licensed hunters for elk reduction but is not technically considered a “hunting park”).

This long standing legal requirement of prohibiting public hunting in national park units has resulted in the NPS managing overabundant wildlife in a variety of alternate methods through the last century. It is important to acknowledge that in the first 30 years after establishment of the Service in 1916, many wildlife populations, particularly ungulates, were at historically low levels as a result of market hunting, habitat degradation, and unregulated sport hunting in the late 19th and early 20th centuries. As populations of ungulates began to recover in the mid-20th century, the NPS and other land managers recognized that increasing populations were having significant negative impacts on vegetation and other natural and cultural resources. The NPS began to cull mule deer and elk using NPS and state wildlife agency personnel in some western parks as early as the 1930s, and this practice continued through the 1960s. In 1963, an NPS advisory board chaired by A. Starker Leopold released a report that stated that “A national park should represent a vignette of primitive America” (Leopold p.3) and “Above all other policies, the maintenance of naturalness should prevail.” (Leopold p.6) These ideas were both formally and informally adopted by the NPS and governed the management of ungulates for almost 30 years. The concepts of allowing nature to run its course and minimizing active population management

were applied throughout the Service. But the Leopold Report also contained the following recommendation: “as removal programs (for wildlife) increase in size and scope, the NPS may find it advantageous to employ or otherwise engage additional shooters from the general public” (Leopold p.14). This advice was not followed during the 40 year period from the mid-1960s to the mid-2000s.

By the late 1980s and early 1990s, NPS managers at many parks were aware of significant issues with increasing populations of white-tailed deer in the East and elk in the West. There were significant documented impacts on ecosystems and park resources, risks to public health and safety, and frustration among neighboring land owners. Managers grew concerned about continuing this “hands off” policy of wildlife population management. In the mid-1990s NPS again initiated culling by agency personnel or hired contractors, such as the USDA/Animal and Plant Health Inspection Service/Wildlife Services.

Other alternatives for reducing effects of ungulates and protecting park resources were often considered during planning efforts and in a few specific cases were implemented. These options include translocation, predator restoration, wildlife fertility control, and fencing to protect vulnerable plant species. At the present time, only fencing is used on a regular basis. Until recently, there has been little

direct public involvement in wildlife management actions on NPS lands other than through the public planning process. However, in the past 10-15 years, there has been increasing public and state wildlife agency support for direct public involvement in removal of excess wildlife from NPS lands. In 2009, Rocky Mountain National Park, and in 2010, Theodore Roosevelt National Park, began using public volunteers to assist with elk culling and in 2016 the NPS compared and contrasted these two programs. For additional information on these projects see Natural Resource Report NPS/NRSS/BRD -2016/1119.

The Service found that implementing public volunteer programs to cull wildlife generated significant support from some constituencies such as state wildlife agencies, rural communities, and sportsmen; however, these types of programs also generated negative responses from anti-hunting groups and some traditional NPS visitor support groups. The fiscal costs are highly variable and depend on the specific logistics of each program. At Theodore Roosevelt NP, the cost per animal was less when the public was engaged than when agency culling was used alone. At Rocky Mountain NP, all animals were taken by volunteers and therefore it was difficult to compare costs of agency only versus volunteer culling. The recommendations to other parks considering this option include: thorough public outreach efforts, site specific analysis of biological and social issues, and a cost benefit analysis by NPS leadership including the political gains and liabilities.

The use of public volunteers is primarily relevant to NPS units where public hunting is not authorized by law. In NPS units open to hunting, it is generally less expensive, more efficient, and more politically acceptable to use public hunting seasons following consult with the relevant State, and with or without state coordination on implementation, in order to achieve the necessary removals to achieve resource management goals. However, there may be certain situations where the NPS might choose to use public volunteers in a hunting-authorized unit; this could include situations where there is no public hunting season available for a specific species, or recreational harvest is not effective due to lack of interest, timing, coordination or other regulatory or social reasons.

Law
s

There are multiple federal statutes, regulations and NPS policies relevant to the use of public volunteers in National Parks as a means of reducing wildlife populations.

54 U.S.C. § 100101(a), also known as the "NPS Organic Act," gives the Service the authority to "promote and regulate the use of the National Park System by means and measures that conform to the fundamental purpose" of its units, "which purpose is to conserve the . . . wild life and provide for the enjoyment . . . in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations". This is a clear mandate from Congress that the NPS has authority over wildlife on its lands, except as otherwise specifically provided by federal statute. This is an important distinction between NPS and other federal land management agencies, such as the Bureau of Land Management (BLM) and the US Forest Service (USFS) where authorities for wildlife management are not as clear and where certain actions, such as management of many wildlife populations have been relinquished to state wildlife agencies.

In addition, 54 U.S.C. § 100752 allows NPS to "provide for the destruction of such animals and plant life as may be detrimental to the use of any System unit". This law allows the NPS to develop and implement programs to destroy native or non-native animals that it deems to be detrimental to the fundamental needs of a specific unit. Historically this has been used to support reduction or elimination of non-native and invasive species, but it also supports reduction of native species, and in particular ungulates like mule deer, white-tailed deer, and elk in situations where they have exceeded ecological or social carrying capacity and have negative impacts on park resources.

Finally, 54 U.S.C. § 102301 gives the NPS the authority to "recruit, train and accept the

services of individuals without compensation as volunteer for or in aid of other activities in and related to System units and related areas". Historically these volunteers have focused on interpretive and visitor functions; however, their use in other activities, such as wildlife management, has also occurred. These three federal statutes form the legal basis and authority for the NPS to manage wildlife and also to engage the public as volunteers to assist in situations where populations need to be reduced for ecological, social, and other reasons.

Regulation
s

NPS regulations at 36 CFR § 1.4 contain definitions of wildlife and hunting that are relevant to wildlife management, and 36 CFR § 2.2 contains NPS's prohibition on hunting except in units with specific statutory authorization for it, as well as additional provisions applicable to hunting. However, these regulations apply primarily to visitor activities, and not to NPS management actions. Wildlife reduction falls under the regulatory exemption for administrative activities carried out by NPS, 36 C.F.R. § 1.2(c), and as a result it is not directly subject to these regulations. Finally, 43 CFR §24.4 addresses resource management on Department of the Interior lands. Paragraph (5) requires consultation with states on a number of actions including "the planned and orderly removal of surplus or harmful populations of fish and wildlife". However, there is an exception that says consultation is NOT required "when the Secretary determines that such compliance would prevent him [or her] from carrying out statutory duties". Consultation can be accomplished through formal National Environmental Policy Act (NEPA) planning processes or through informal meetings and dialog.

Policie
s

There are no specific policies in Management Policies 2006 that directly deal with the use of public volunteers for wildlife culling. However, Section 7.6.1 discusses a variety of activities in the Volunteers in Park (VIP) program yet only mentions wildlife culling in the context of interpretation and education. Section 4.4.2.1 *NPS Actions that Remove Native Plants and Animals* is applicable as it supports removal of native animals only when it can be done without unacceptable risks to native resources, natural processes, or other park resources. This section also specifically allows for the removal of native wildlife "by NPS personnel or their authorized agents." It further states that when such removals occur the "destroyed animals may be left in natural areas" and allowed to decompose unless there are circumstances where carcasses should be removed for human health, safety and other reasons. This policy further states that live animals or carcasses may be removed from parks according to applicable laws, regulations or agreements, including preferences for Native Americans.

Differences Between Culling and
Hunting

As discussed above, the destruction of detrimental animals as part of NPS wildlife management activities, or culling, is governed by different authorities than public hunting of wildlife by park

visitors. It is important for NPS managers to be aware of the distinctions between the two and to consistently manage and refer to them as distinct activities.

NPS received some guidance on these distinctions in a 2011 decision by the U.S. District Court for the District of Colorado that rejected a challenge to the elk management plan at Rocky Mountain National Park (*WildEarth Guardians v. National Park Service*, 804 F. Supp. 2d 1150 [2011]). The plaintiffs in that case argued in part that NPS's use of public volunteers to cull elk violated the legal prohibition of hunting in the park. In rejecting that argument and upholding the NPS plan, the court discussed several key ways that the elk culling differed from hunting, namely: the **purpose** for destroying the animal, the **manner** in which the destruction occurred, and the **disposition** of the animals that were killed. First, culling is done exclusively for conservation and stewardship purposes, while hunting is done primarily for recreation or

procuring food. Second, culling is conducted under controlled circumstances under the supervision of NPS personnel, while hunting is performed at the hunter's discretion (subject to applicable licensing and laws) and with elements of "fair chase". Finally, hunting allows and most often requires the person taking the animal to keep the meat, while culling does not. The court's opinion finished with the following: "put simply, culling serves the public purpose, while hunting serves both public and private purposes".

The U.S. Court of Appeals for the Tenth Circuit later affirmed this decision in an opinion that for most purposes is more legally authoritative, 703 F.3d 1178 (10th Cir. 2013), but because it did not discuss the distinction between culling and hunting in the same detail, the District Court opinion remains a useful source of guidance on that point. It is not entirely binding on NPS actions—culling programs do not necessarily need to mimic the Rocky Mountain National Park elk plan in every detail—but culling that follows the principles discussed can be seen as more likely to withstand any potential legal challenges.

Maintaining these distinctions between recreational hunting and culling is thus a critical aspect of instituting a public volunteer reduction program. There are other aspects of these distinctions that NPS managers should be aware of.

Licensing: All recreational hunting in the U.S. requires a state issued hunting license (the only exceptions may be damage control on private lands for certain species [some of which are not classified by states as wildlife]). There is no requirement that public volunteers on NPS lands not open to hunting have a state issued hunting license. In fact, culling appears less like hunting if no license requirement is mandated by the NPS. Some states that are partnering in these programs may desire the NPS to make this a requirement, but it may not be prudent as it can blur the distinction between hunting and culling. In addition, most states require a hunter education certificate (issued by states after taking a course) before a hunter can purchase a

license. Parks might consider this option as one of the multiple requirements for prospective public volunteers. It gives the NPS knowledge that the person applying has had some firearms and safety training. However, requiring a hunter education certificate does not mandate requiring a state hunting license for culling purposes. The most important aspect of this concept is that volunteers have the skills necessary to perform the culling operations. These skills can be evaluated in a variety of ways (see *Volunteer Selection* section below).

State Regulations: Most hunting occurs in the U.S. under a series of laws and regulations that dictate criteria that hunters must follow. These include limits on the species and number of animals that may be killed, seasons for specific species, types of weapons and ammunition allowed, safety clothing, and fair- chase rules, among others. It may be important for the NPS **not** to fully follow the state regulations for the species that the NPS is culling. For example, NPS may not follow state limits on the number of animals that can legally be removed, whether as a daily or season restrictions, if they interfere with NPS's management goals or decrease the efficiency of culling efforts. In many situations there are opportunities for one shooter to kill multiple animals and achieve culling goals more quickly and efficiently than if the NPS were to follow applicable state rules. State wildlife agency rules or laws that regulate safe hunting activities, such as blaze orange, shooting from or across public roads, and carrying loaded weapons in vehicles should be considered by parks as potential safety measures that could be adopted for culling programs. The NPS must be considerate of stewardship goals and objectives when designing their project implementation plan.

Fair-Chase: Fair-chase is a philosophy that governs and limits the use of certain tools that would make hunting easier and give hunters a distinct advantage. Laws and regulations regarding fair-chase are not consistent between states. Techniques that fall outside of fair-chase may include the use of aircraft, vehicles and lights to kill wildlife, hunting over bait, hunting in situations where wildlife is artificially constrained by fences, and the use of electronic devices to attract targeted wildlife to certain areas. However, many of these tools and techniques might be valuable to aid the NPS and public volunteers in the efficient reduction of targeted species. Under a culling program the principles of fair-chase are not

applicable, and may run counter to the overall goals of the program. Two techniques that parks have used are the use of bait to attract animals to areas that are safe and convenient for culling, and the use of radio- collars to identify animal locations for more efficient culling operations.

Table 1: *Park attributes*

ROMO THRO WICA HAVO EVER Species Elk Elk Elk Non-native

Non-native Mouflon sheep

reptiles National vs state volunteer selection ***Use of Volunteers in Parks to Cull Wildlife***

There are five park units that currently or in the recent past have used public volunteers to remove wildlife (see Table 1). At Theodore Roosevelt National Park (THRO), Rocky Mountain National Park (ROMO), and Wind Cave National Park (WICA) three unique programs were used to kill elk. All three used members of the public to shoot elk and assist with dressing, cleaning, and storing the meat. Each program was different in the method of volunteer selection, the

amount of training and supervision, the efficiency of removal, and the cost; however, they all worked closely with their respective state wildlife agencies to distribute the meat derived from these programs. At Hawaii Volcanoes National Park (HAVO) members of the public are brought into units where non-native Mouflon sheep removal is occurring. Two volunteers are given the opportunity to shoot and a third person can retain the meat from as many animals as the team can remove per day. A state hunting license is required at HAVO but not at the other parks where volunteers are removing wildlife. At Everglades National Park (EVER) members of the public can sign up as agents of the park to live capture Burmese Pythons and other non-native reptiles

5 National National State National but mostly local

National but mostly local State hunting education course required?
No No Yes Yes No
Hunting license required?
No No No Yes No
Meat distribution through the state? Yes Partially Yes No N/A Shooting test required? Yes Yes Yes No N/A VIP agreement required? Yes Yes Yes Yes Yes Criminal background check required? Yes Yes Yes No Yes Volunteer period At least one season
5 days 5 days 1 day At least 5 days in a 6 month period Volunteer uses NPS firearm? Yes No No No N/A NPS or public supplied non-lead ammunition? NPS Public Public NPS and public N/A Meat distribution Public lottery
Volunteers (through ND), tribes, charities (directly)
Volunteers (directly), charities and tribes (through SD)
Volunteer meat recovery person directly
N/A
Carcass storage Commercial meat locker
Refrigerated truck on site
Refrigerated truck on site
N/A N/A

and amphibians. Injurious wildlife is then placed in bags and collection bins within the park and park staff is responsible for analysis and disposition of the animals. A current Volunteer in Parks agreement is required in each of these parks to complete this work. Costs and staff time vary widely between parks and depend on how intensively the program is managed. To date, all programs where firearms are used have at least one NPS employee with the volunteers at all times.

Where might public volunteer culling be effective?

Engaging public volunteers to remove wildlife may be a useful tool in other NPS units. At the present time there are four parks that have ongoing formal NEPA planning processes that include an alternative to use public volunteers; these include Grand Canyon National Park (bison), Olympic National Park (mountain goats), and Great Sand Dunes National Park and Preserve (elk), Chesapeake and Ohio Canal, and Harpers Ferry National Historical Park (white-tailed deer). There are common biological, socio- political, and logistical attributes of parks that lend themselves to engaging public volunteers.

Biological environment

There should be documented adequate demonstration of the problem and impacts caused by overabundant wildlife species. Documenting effects of overabundant wildlife can take years of data collection and analysis and may require specific biological expertise. Some NPS units may not have this expertise on site and partnering with outside researchers (e.g., U.S. Geological Survey staff), the NPS Inventory and Monitoring Division, universities and contractors, is encouraged in order to assist with this biological evaluation. Or, as in EVER, the purpose of the volunteer program itself may be to acquire individual animals to aid in understanding the problem and developing an appropriate management strategy. These analyses may include habitat and vegetation assessments, loss of or damage to key indicator species, or potential impacts on species of special concern (e.g., threatened and endangered species and their habitats, local species of concern), or detection or removal probabilities of the target species itself. There should also be sufficient ecological and demographic information about the target population to make informed choices on how many animals, and of which sex and age class to remove to meet and sustain population management objectives. Finally, it is important to understand animal accessibility. Knowing wildlife distribution and abundance, what migration or movement patterns are, and when and to what extent they use NPS lands and their impacts, are critical.

Social environment

The use of public volunteers has many internal and external social issues that park managers should consider. This is a relatively new tool and NPS employees may not be comfortable or familiar with members of the public using firearms in parks or with the public being involved in activities that have traditionally been performed by NPS employees or other professionals. Despite these concerns, several National Parks, with internal as well as external support, have successfully implemented public volunteer culling programs.

Local, regional, and national stakeholders often have strong feelings about the benefits and detriments of using public volunteers to cull wildlife. Nationally, there are many pro-hunting and wildlife conservation organizations that support the use of public volunteers as a tool for wildlife

management in the National Park System. Many of these groups have robust political support and have used their influence in various public processes to seek greater use of public volunteers. Conversely, there are a number of animal welfare, environmental conservation, and national park support groups that have expressed strong opposition to the use of public volunteers for culling activities as it closely resembles recreational hunting. As discussed above, NPS was sued by one such group over the Rocky Mountain National Park elk management plan, in part over the use of public volunteers. Parks considering the use of public volunteers should reach out to both sides of this issue and have an active program for stakeholder

engagement at the national and local levels; this is both to inform and prevent either side from diverting planning processes and decisions with political intervention.

At the local level, support for or opposition to public volunteers depends on a variety of factors; key among them are local government, local land-owners, and other constituents. All of these stakeholders should be well informed of decision making processes and be invited into the conversation. Urban and ex- urban constituents tend to focus concerns on safety issues, effects on visitation and local economies, as well as placing more emphasis on animal welfare issues. In contrast, rural constituents often have concerns about impacts to private property and agricultural interests. Additionally, they tend to focus on impacts on local hunting opportunities. This was the situation at Theodore Roosevelt NP in North Dakota where there was great public interest in elk culling opportunities that was compounded by few opportunities for elk hunting in the state. If there are ample hunting opportunities locally there may be less demand from hunters and state wildlife agencies for using public volunteers. This was the scenario at Rocky Mountain NP where there is a great deal of public hunting available for elk in the state and thus less interest to participate in controlled culling activities. Likely the best source of information regarding local hunting communities will be state wildlife agencies. They work with and know this constituency well and can provide key information to parks regarding the potential interest from the state hunting community. In addition to local hunting interests parks should be aware of the concerns of local landowners, be they private, county, state or federal and ensure that their opinions are taken into consideration prior to making decisions.

In addition to understanding national and local publics, it is important to understand the how culling operations are perceived in light of societal ethics. For example, considering whether females have dependent young at the proposed culling time (e.g., April-August for most ungulates) is important. If it is necessary to remove females during this time consideration should be given to removing their offspring as well. Similarly, due to animal welfare concerns significant effort should be made to minimize wounding losses. Finally, culling of male animals, such as buck deer or bull elk is often necessary to achieve population goals and to mitigate habitat issues. If so, then a good solution is to wait until antler drop, if possible. This reduces the

perception that trained volunteers are targeting trophy males and thus reducing desirable public hunting opportunities outside of NPS boundaries.

Logistical constraints

Funding

On-the-ground logistics and personnel experience often dictate the nature of the volunteer program. Recent volunteer programs have been resource intensive, both in terms of costs and employee time. Specific costs for implementation of two elk culling programs has been analyzed and can be found in Natural Resource Report NPS/NRSS/BRD -2016/1119. Future programs may be more efficient and less expensive depending on the intensity of the culling effort and the level of oversight individual parks find necessary. Pursuing funding for implementation at the same time as finishing planning compliance will make removal operations more expedient.

Timing

The timing of trained volunteer actions depends on many variables. Removal periods should be prioritized based on efficiency of removals and optimizing safety for staff and volunteers while minimizing impacts to other park visitors. One important factor is deciding whether or not removal efforts will be in conjunction with hunting seasons outside the park. In some situations efforts are coincident so as not to create a refuge situation either inside or outside of the park and therefore maximize efficiency. Alternately, it may be necessary to cull animals during the summer months when volunteers can most effectively access backcountry habitat but most public hunting is not available. Similarly, it is important

to consider if it is possible to differentiate males and females easily at the time of year considered for removal operations. Generally, it is desirable to focus on removal of females if the goal is population reduction or stabilization. Additionally, it is often perceived more favorably by stakeholders if females rather than males are removed, particularly in situations where there is public hunting focused on male harvest adjacent to NPS properties. However, there are instances where it may be more important to remove males, such as when there is disease that carried or shed more often by one sex.

Time of day

Most wildlife species are more active in early morning and late evening and thus these can be productive times to focus culling efforts. These are also periods that may not correspond to peak visitor use. Depending on local conditions, night culling over bait and with lights or night vision optics can be very effective and this time may avoid visitor conflicts. However, night removal raises safety issues and needs to be carefully coordinated. By using stands or specific shooting areas and not allowing volunteers to randomly move around after dark, safety concerns can be mitigated. During all of the public volunteer removal operations conducted to date volunteers operated during daylight hours.

Locatio
n

Depending on the species and park terrain, culling locations will vary significantly. Site selection criteria should include areas where animals are readily available and at a density that allows for adequate efficiency. When the target species is white-tailed deer, an animal with a relatively small home range, culling can usually be done in any portion of the home range and should be targeted to areas that are distant from high visitor use. Use of tree stands and bait can significantly increase culling success. Conversely, elk and other large ungulates are often migratory and may not stay in a park year-round; thus culling should occur when animals are available and concentrated in the park. Given the direction already noted to avoid times with dependent young, this may constrain available locations.

Culling is more efficient if there is relatively easy access for trained volunteers to access the targeted species. Use of radio-telemetered sentinel animals (i.e., Judas animal) can increase efficiency when locating groups of herd based animals. Requiring lengthy walking to access culling areas and remove carcasses can reduce efficiency, though may be necessary (wilderness areas). Theodore Roosevelt NP packed quartered animals out of the backcountry in backpacks and via pack horses whereas Wind Cave NP used ATV/UTVs to remove entire intact carcasses. Rocky Mountain NP gutted the animals at the kill site and sledded carcasses short distances to the road by hand. Hawaii Volcanoes NP had moderate hikes to access Mouflon carcasses that were brought out in backpacks. In addition to the level of difficulty in accessing animals and carcasses, wilderness regulations add to the complexity and analysis. Without access to motorized vehicles, efficiency will be decreased in most situations.

Parks should also consider impacts to other visitors. Closing areas to public use during culling operations may be warranted. Theodore Roosevelt NP and Wind Cave NP closed the backcountry to visitor use during the culling operations whereas Rocky Mountain NP did not close areas but conducted low intensity operations at times when visitors were not typically present. At Hawaii Volcanoes NP, in units where culling occurs limited visitation is allowed but only during non-culling times. Potential visitor closures are often controversial and should be considered during the planning processes.

Voluntee
rs

Selectio
n

Selection of public volunteers who have the skills and attitude necessary for a successful culling operation is critical. First, the pool of potential volunteers from which to select must be identified. The NPS is a national organization and as such, one potential pool is all interested U.S. citizens. Depending on method

and intensity of advertising, this may create a large pool of potential applicants and may be difficult to manage. Theodore Roosevelt and Rocky Mountain NPs advertised nationally, through websites and other media outlets and Theodore Roosevelt NP in particular drew intense national interest, which added to the overall cost of managing the program. In contrast, Wind Cave NP, in cooperation with South Dakota Game Fish and Parks (SDGFP), used only the SDGFP hunter data base as the potential applicant pool. Because South Dakota restricts elk hunting to only residents this restricted the pool to in-state hunters. This decreased the cost of volunteer selection. Early on at Hawaii Volcanoes NP, there was national advertisement and interest in of the program. However, after the initial 8 years, the park took a break to implement a planning process and since then has focused on local advertisement and meeting the interest of local communities although the program remains open to any U.S. citizen who meets the requirements. Similarly, Everglades NP has focused on local residents with knowledge of constrictor snakes and maximizing effective participation over time. They used word-of-mouth and the park website to build a network of volunteers who are willing to return multiple times but the program remains open to anyone who meets the requirements.

In some situations, an efficient system may be to use a state data base of hunters who have an expressed interest in the targeted species; however, this then requires that a person be a state licensed hunter in order to be considered and may not be perceived as a fair process by non-hunters or people from other states. Conversely, an NPS derived selection process that extends beyond state boundaries may be more defensible given that the National Park System is managed for all members of the public. There are no known legal constraints regarding local, state, or national selection processes, nor have there been any specific challenges to date in existing NPS public volunteer culling programs.

Beyond geographic location of potential volunteers, a method of evaluating and selecting volunteers based on their skill sets and attitudes towards culling, hunting, and conservation is a critical need. This may include a shooting proficiency test, self-certifications of fitness and/or skill in meat processing, oral/written interviews by NPS staff to determine experience of the volunteer, demonstration of these skills prior to allowing a volunteer to participate, and/or on the job training. A method of confirming a volunteer’s eligibility to possess a firearm under the Gun Control Act (1968) and Lautenberg Amendment (2001) is required (e.g., criminal background

check, Lautenberg certification). Different methods have been used at each park. The most intense screening process was at Rocky Mountain NP, which required an extensive written application, criminal background check, in-person interviews including their personal views of conservation and hunting, and a shooting test. Additionally, they required two days of classroom training and one day in the field as a dry run. Conversely, at Theodore Roosevelt NP there were no in-person interviews. Self-certification of physical capabilities and an on-site shooting test were the only requirements in addition to a half-day classroom orientation. Despite these self-certifications there was significant drop-out due to physical limitations and failure of the shooting test (~20-25%). More intensive screening processes and training add to program costs. The amount of training and screening needed may be a function of the complexity of the program and the level of controversy that culling has generated among stakeholders, as well as site-specific safety issues. This will need to be decided on a park by park basis.

Supervisio
n

Clearly, evaluation and encouragement of skills related to knowledge and use of firearms, killing and dressing large animals, and working in a team environment takes tact and experience on the part of NPS employees functioning as volunteer supervisors. Employees who are supervising volunteers using firearms to cull wildlife must have high skill levels in these fields themselves which often means they may have traditional hunting backgrounds or have participated in wildlife culling in the past. Additionally, they must have high levels of maturity, excellent interpersonal skills, and enthusiasm for leading people by demonstrating a good example. Supervisors must also know what to do in the event of a medical emergency; therefore basic or backcountry first aid and CPR are important skills. Finally, an

excellent working relationship between direct supervisors and other NPS staff, particularly law enforcement and interpretation, may facilitate positive outcomes if there is a human-related emergency in the backcountry. Given the diverse nature of these operations, NPS staff with both biological and visitor safety backgrounds are needed to coordinate a successful program.

Supervision of volunteers can be intensive or extensive. For example, at Rocky Mountain NP, the Incident Command System was employed during public volunteer operations; whereas at Everglades NP volunteers work unsupervised by NPS employees. To date, when firearms are used at least one NPS employee has directly supervised 1-4 volunteers. Depending on the difficulty of finding animals, the terrain that is covered, fitness of the volunteers, difficulty in removing meat safely from the field, and circumstances surrounding visitor safety, different parks may require more or less supervision. In most parks volunteers also help with data collection and dressing and processing meat. It is important for supervisors to emphasize the importance of accurate data gathering and hygienic meat processing techniques as many

volunteers may not have experience in these areas.

Those public volunteers who have a positive relationship with their VIP supervisors and view their culling experience as beneficial often become long term advocates and ambassadors of the Park and the NPS (Natural Resource Report NPS/NRSS/BRD -2016/1119). Volunteers with the time and means to engage in these types of programs are most often members of the local or at least regional communities. They often return to the park and engage in other volunteer opportunities such as vegetation monitoring, data collection, or wildlife surveys. To date, the overwhelming majority of volunteer experiences have been positive and they are eager to share their experiences with others in their communities. They bring legitimacy to the culling programs by telling their communities the reality and dispelling the myths of the culling programs. They often speak with the press or on social media sites and can tell their stories publically, again validating the NPS programs and their wildlife management and stewardship goals. The positive nature of their stories is most often directly related to their experience in the culling program. When the supervisor made them feel useful, engaged, and a valued member of the team, their stories often reflect this. The unique nature of the experience also adds to the affirmative feedback that volunteers give. Therefore, selecting the appropriate supervisors is of utmost importance.

Method of take

There are a variety of weapon types available to cull wildlife. This decision should be based on a number of factors including: the targeted species, safety, noise issues, and efficacy of the weapon. Tolerance for wounding issues and local social norms surrounding firearms will also influence this decision.

Only non-lead ammunition should be used in culling operations per Director's Memo dated March 4, 2009. This policy is to protect human and wildlife health, reduce impacts on the environment and minimize spent lead in soil entering the food chain via scavenging. While non-lead ammunition may be more difficult to find and more expensive to purchase than traditional lead bullets, it is an NPS requirement in culling activities. Volunteers may not be familiar with using non-lead ammunition. Parks can offer to provide non-lead ammunition to volunteers to use in personally owned weapons, or they can provide standardized weapon and ammunition combinations to volunteers. Alternately, parks can require volunteers to bring their own weapon and ammunition of appropriate caliber. Requiring the use of NPS firearms provides a level of consistency but may be a burden to participants as most volunteers already own and are most comfortable with their own weapons. There is a significant cost to parks if they decide to purchase and maintain weapons for culling and this may not be necessary to ensure program success (see Table 1).

February, 2018

Rifles

High powered, scoped, center fire rifles are generally the most efficient tool for culling large ungulates. They have a greater range, greater killing power, and widespread availability that make them a logical choice. The high accuracy and killing power make them more efficient and effective than other weapons and there is less wounding loss. However, bullets can travel long distances, more than a mile in certain situations, therefore it is important to know the backdrop and final disposition of the bullet if the target is missed. In urbanized or high use areas this can create safety concerns. Restricting the use of rifles to certain areas or requiring volunteers to be located in stands or against safe backdrops can dramatically reduce risk, but it also limits efficiency. Rim fire rifles (.22 caliber) are generally not a viable tool for culling ungulates. They do not have enough power to efficiently kill larger animals (white-tailed deer and larger) and can still travel distances up to one mile; therefore, their use is not recommended. Appropriate caliber and grain of ammunition is species and environment dependent. State wildlife agencies often have requirements for caliber and grain for a given species that may be adopted by parks. Other sources of information on ammunition size are available from NPS law enforcement personnel and from other parks that have engaged in culling, either internally or with the public. Semi-automatic high powered rifles are legal to use in many states; however the number of bullets allowed in magazines varies by state. For safety reasons, it is recommended that parks consider adopting rules consistent with state law that restrict the total number of bullets available in both the magazine and chamber.

Shotguns

Shotguns shooting either a slug or large shot (00 buck shot for example) are highly effective in killing larger animals, in particular white-tailed deer, but are limited by their effective range. In general, shotguns are effective up to 75-100 yards. In certain situations like forested environments they can be an effective tool for culling. They may be particularly useful in situations where houses, campgrounds, or other human activity occur in the general area. Shotgun slugs will generally not travel more than 300 yards. There are numerous situations where shotguns have been used by hunters to effectively reduce white-tailed deer in urban and ex-urban locations. They are most effective when used in conjunction with tree-stands and over baited areas. In nearly all situations 12 gauge shotguns should be used, as smaller gauges such as 16, 20 or 28 are not typically effective for large mammals. Non-lead shotgun slugs and buck shot is generally widely available.

Muzzleloading rifles

These weapons have similar capabilities to 12 gauge shotguns but are much less efficient as they shoot only one round and then have to be reloaded. Given this reduced efficiency they should not be considered for culling.

Archer
y

Archery equipment has evolved in recent years and has become more efficient with the use of compound bows. Archery is effective up to 50-70 yards and arrows tend to travel less than 150 yards in most situations. Given these parameters archery could be utilized by public volunteers in specific situations where animals are found in close proximity to developed areas. Generally, archery is most efficient when combined with the use of blinds or tree stands and efficiency is maximized for culling if done over bait. Another potential benefit of archery is the lack of sound impacts as compared to firearms. One significant drawback of archery is that wounding loss is increased and wounded animals may leave the park and not be recovered. Additionally, archery is less efficient than other methods given the time it takes to shoot multiple arrows and may not be appropriate for large body size animals such as bison. The park must considered volunteer skills and animal welfare aspects in this type of weapon use.

Carcass disposition

While retention of meat is not required by law or NPS policy, it is consistently an important ethical consideration when deciding on the disposition of the culled animal. State wildlife agencies, the general public, and NPS staff generally agree that using the meat for human consumption is a positive outcome from a culling operation (Natural Resource Report NPS/NRSS/BRD -2016/1119). NPS's authority to "provide for the destruction" of detrimental animals also allows for disposition of the remains of these animals, whether it is via meat donation to state wildlife agencies, charities, tribes, or individuals or to dispose of the carcasses in other ways such as decomposition on the landscape or left for scavenging or through the use of landfill, incineration, or alkaline digestion. All options are available for disposition of carcasses. Parks should be aware of the cultural and political sensitivities of methods which appear to waste edible meat or otherwise discard what may be culturally valuable portions of the carcass. While there is no legal prohibition against allowing a volunteer to keep an animal the VIP culls or its meat, it is important to note that this weakens one of the distinctions between volunteer culling and hunting (as discussed above).

In general, there is strong support for salvaging valuable portions of the carcass and making

them available to tribes, charitable organizations, or volunteers. State wildlife agencies often want the volunteers to be able to retain the meat. To date, parks have generally worked closely with states for meat distribution. At Rocky Mountain NP, the carcass became the property of the state once it was loaded into a truck for transport to a meat locker. At Theodore Roosevelt NP some meat was donated to the state and this was in turn donated to the volunteers and the remainder of the meat was directly donated to tribes or food banks. At Wind Cave NP, most meat was donated to the state which distributed to charities and the rest going directly to volunteers. At Hawaii Volcanoes NP, meat is salvaged by a third volunteer who is not part of the culling operation and the meat is directly retained by this person. At Everglades NP, once the animal was dispatched by NPS personnel, a full necropsy is performed, data collected, and the carcass returned to the environment to decompose. Disease and toxins must be considered when planning for disposition.

Non-edible portions of animals such as antlers, horns, and hides are often desired by public volunteers and by tribal interests for ceremonial reasons. The retention and donation of these products can be controversial and also make for a less efficient cull. Removing these from the field takes additional time and effort and can reduce time spent in actual culling. However, in some situations, parks may find it advantageous to allow some of these parts to be removed and donated to specific groups or to volunteers depending on local situations. Generally, photographing volunteers in “trophy poses” is discouraged.

Public health

Once a decision has been made to donate all or portions of carcasses it is important to maintain good meat handling protocols to prevent contamination or spoilage. The U.S. Public Health Service (USPHS) has Public Health Consultants stationed within parks throughout the nation as well as a Public Health Veterinarian stationed within the Biological Resources Division of the Natural Resource Stewardship and Science directorate. These staffs are available to consult on regular basis with parks wanting to maintain meat in a condition that is appropriate for human consumption. [Note: at the time of writing Captain George Larsen (george_larsen@nps.gov) stationed at Yellowstone National Park is the USPHS employee with the most expertise in this area.]

It is important to cool an animal as quickly as possible after death to maintain meat quality. This usually means removing the organs of the animal in the field. Depending on ambient temperatures, field removal options, data collection and disease testing needs, and storage options this may mean deboning the animal in the field and putting meat in game bags or it may mean removing the entire animal from the field either whole or in quarters. Processing should be efficient and focused on keeping meat from being

contaminated with fecal or gut material as well as dirt and other debris. Knives should be kept clean. Meat can also be cleaned at a later time during processing but should always be handled with care and attention. Exact requirements for holding temperatures and best management practices for meat donation should be discussed prior to project implementation with USPHS staff. Finally, there are a wide range of options for donation of meat. The entire carcass, carcass without entrails, skinned and quartered carcass, deboned meat, or fully processed and packaged meat can be donated. Logistics and meat holding times will depend on the resources available (i.e., refrigeration trucks, meat lockers, meat processors, individuals doing their own meat processing, state cooperation, etc.). Meat derived from wildlife resources is not U.S. Department of Agriculture inspected and there is no guarantee of meat quality. Recipients should be made aware of this. There is, however, an expectation that products donated by the NPS are known to not be harmful or detrimental to human health.

Disease testing

There is only one disease, chronic wasting disease (CWD), which is routinely tested for in culled and donated wildlife species. Most cervids (deer, elk, and moose) are tested prior to donation. This testing is performed to better understand and surveil for the disease in wildlife. It is not a food safety test. However, if an animal is tested for CWD it should not be donated until after the test results are available. While CWD is not known to affect humans, positive carcasses should not be donated for human consumption. A meat donation waiver that accompanies meat from CWD endemic areas is strongly recommended and should list the precautions that have been taken to prevent CWD from entering the human food chain. Other diseases may be tested for depending on local conditions at the park. Any animal that appears sick at the time of culling or has abnormal lesions observed at butchering should be removed from the human food chain. Disease testing is never for food safety and does not guarantee a safe product. If an animal is found to have lesions either during butchering or during a field necropsy it should be submitted for further evaluation through a veterinary pathology laboratory or through the NPS Biological Resources Division-Wildlife Health Branch. (Contacts can be found at the Wildlife Health Branch website)

Summary

Engaging public volunteers in the removal of wildlife from NPS units is a relatively new and novel management and stewardship approach that a few parks have utilized. It is important to emphasize that this is not a one-size-fits all management option. There are no exact requirements for this kind of a volunteer program, but it is necessary to follow Volunteer Program Guidelines and Requirements. The best outcomes generally occur when a clear biological need has been demonstrated, when there is good communication and cooperation with state wildlife agencies, when animals can be reasonably accessed by members of the public in a safe and efficient manner, when visitor use is minimally impacted and when NPS staff understands the process and logistics of killing and processing animals. Park staffs need to balance safety concerns for volunteers, staff, visitors, and the public with animal welfare issues

and overall program efficiency. These factors need not be weighted equally and the optimal balance will depend on site-specific circumstances. For example, direct supervision of public volunteers can increase safety and decrease animal welfare concerns but may not be warranted if highly skilled volunteers are chosen. Alternately, in Eastern parks in ex-urban landscapes, it may be necessary to have higher levels of NPS supervision.

In summary, the following concepts should be considered when implementing an NPS public volunteer culling program:

- Public perception of NPS professionalism and credibility is important for program success. Public volunteers culling wildlife is a new management tool that is likely to be highly scrutinized from a

wide variety of viewpoints. It will be important to be transparent about our programs and thoughtful about implementation practices.
- Animal welfare is important to the public and to the NPS and should be considered in all aspects of project planning and operations.
- It is important to use an adaptive management approach to a program that engages public volunteers. This is a management action that should be evaluated like any other responsible and well informed management action at the park. This means gathering biological, technical, and economic data on the program as it occurs and periodically evaluating whether or not it is meeting NPS management goals.
- Consistent communication is critical. The park should have a well-developed communication plan shared with park staff, the local community and other engaged partners such as the State.
- Ultimately, the most successful programs will optimize safety and efficacy.

Submitted by:

The Biological Resources Division (BRD), Natural Resource Stewardship and Science Directorate (NRSS)

Jenny Powers DVM, PhD, Wildlife Veterinarian, BRD, NRSS,

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NRSS,

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NRSS.

For additional information please
see:

Leopold, A.S., S.A. Cain, C.M. Cottam, I.N. Gaberielson, and T.L. Kimball. 1963. Wildlife Management in the National Parks. Administrative Policies for Natural Areas of the National Park System. U.S. Department of the Interior, National Park Service.

Nie, M., C. Barns, J. Haber, J. Joly, K. Pitt, and S. Zellmer, “Fish and Wildlife Management on Federal Lands: Debunking State Supremacy,” Environmental Law, 47, no. 4 (2017)

Powers, J., R. Kahn, W. Whitworth, J. Mack, and B. Bobowski. 2016. Elk management in the National Park Service: Two case studies in the use of public volunteers. Natural Resource Report NPS/NRSS/BRD/NRR—2016/1119. National Park Service, Fort Collins, Colorado.

Re_ Game and Fish Commission Passes Resolution ...(3).pdf

From: Gustine, David
To: Wrigley, Mike
Subject: Re: Game and Fish Commission Passes Resolution on Grand Teton Mountain Goat Removal
Date: Thursday, January 16, 2020 8:51:26 AM

They were - - no change in our plans this winter yet. Evolving situation, but can chat on phone if interested in details.

On Thu, Jan 16, 2020 at 8:28 AM Wrigley, Mike <mike_wrigley@nps.gov> wrote:

> Sorry to see this. Thought they were on board with your approach. I know you guys included an option of using skilled volunteers, but not implementing that this winter. Are you still looking into that for the next round? What are your plans to respond?
>
> Mike Wrigley
> Wildlife Conservation Branch Chief
> Biological Resources Division | Natural Resource Stewardship and Science
> National Park Service | 1201 Oakridge Dr | Ft Collins, CO 80525
> mike_wrigley@nps.gov | wk 970.225.3566 | cell 719.207.3333
>
> FIND YOUR PARK
>
> On Thu, Jan 16, 2020 at 7:21 AM Gustine, David <dave_gustine@nps.gov> wrote:
>
> > just an fyi on current events
> >
> > Begin forwarded message:
> >
> > **From:** Wyoming Game & Fish Department <WGFD_noreply@public.govdelivery.com>
> > **Date:** January 15, 2020 at 6:30:04 PM MST
> > **To:** denise_germann@nps.gov
> > **Subject: Game and Fish Commission Passes Resolution on Grand Teton Mountain Goat Removal**
> > **Reply-To:** <WGFD_noreply@public.govdelivery.com>
> >
> > NEWS Cheyenne Headquarters
> >
> > **Jan. 15, 2020**
> >
> > Game and Fish Commission Passes Resolution on Grand Teton Mountain Goat Removal
> >
> > CHEYENNE - The Wyoming Game and Fish

Commission condemned the National Park Service's planned use of aerial gunning to remove mountain goats in Grand Teton National Park (GTNP) at their Jan. 15 meeting.>>

Wyoming Game and Fish Director Letter
Commission Resolution

Conserving Wildlife – Serving People

The Wyoming Game and Fish Department manages and conserves more than 800 species of fish and wildlife across Wyoming. For nearly 120 years, we've carried out our mission to conserve wildlife and serve people. Through these efforts, the Wyoming Game and Fish Department ensures the public continues to enjoy Wyoming's vast fish and wildlife resource through hunting, fishing, trapping, wildlife watching and other forms of outdoor recreation. Hunters, anglers and wildlife watchers contribute over a billion dollars to Wyoming's economy each year.

For press in need of a high-resolution photo, please send your requests to sara.dirienzo@wyo.gov.

This service is provided to you at no charge by Wyoming Game & Fish Department.

Wyoming Game and Fish Department
Cheyenne Headquarters
5400 Bishop Blvd
Cheyenne, WY 82003

Rebekah Fitzgerald
Communications Director
(307) 777-2596
rebekah.fitzgerald1@wyo.gov

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This email was sent to denise_germann@nps.gov using GovDelivery Communications Cloud on

behalf of: Wyoming Game & Fish Department · 5400 Bishop Blvd · Cheyenne, WY 82006 · (307) 777-4600

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307-739-3485

Re_ Game and Fish Commission Passes Resolution ...(2).pdf

From:	Philbrook, Kristen
To:	Gustine, David; John Mack; Patrick Malone; Jennifer Carpenter
Cc:	Mike Wrigley; Powers, Jenny; Happe, Patricia
Subject:	Re: Game and Fish Commission Passes Resolution on Grand Teton Mountain Goat Removal
Date:	Friday, January 17, 2020 3:32:45 PM

Hi Dave, thanks for sending this information. Please let me know if assistance is needed at the regional level on WY Game and Fish's resolution to immediately cancel plans to kill goats through the use of aerial gunning rather than skilled volunteers.
FYI to those on the email chain at regional office - More information and a letter to the acting superintendent is included in the news release below.

Kristen Philbrook
Wildlife Biologist
NPS Regional Office Serving Interior Regions 6,7 & 8
Lakewood, CO
(303) 969- 2168
Kristen_Philbrook@nps.gov

On Thu, Jan 16, 2020 at 7:21 AM Gustine, David <dave_gustine@nps.gov> wrote:

> just an fyi on current events
>
> Begin forwarded message:
>
> **From:** Wyoming Game & Fish Department <WGFD_noreply@public.govdelivery.com>
> **Date:** January 15, 2020 at 6:30:04 PM MST
> **To:** denise_germann@nps.gov
> **Subject: Game and Fish Commission Passes Resolution on Grand Teton Mountain Goat Removal**
> **Reply-To:** <WGFD_noreply@public.govdelivery.com>

NEWS Cheyenne Headquarters

Jan. 15, 2020

Game and Fish Commission Passes Resolution on Grand Teton Mountain Goat Removal

CHEYENNE - The Wyoming Game and Fish Commission condemned the National Park Service's planned use of aerial gunning to remove mountain goats in Grand Teton National

Park (GTNP) at their Jan. 15 meeting.>>

Wyoming Game and Fish Director Letter
Commission Resolution

Conserving Wildlife – Serving People

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For press in need of a high-resolution photo, please send your requests to sara.dirienzo@wyo.gov.

This service is provided to you at no charge by Wyoming Game & Fish Department.

Wyoming Game and Fish Department
Cheyenne Headquarters
5400 Bishop Blvd
Cheyenne, WY 82003

Rebekah Fitzgerald
Communications Director
(307) 777-2596
rebekah.fitzgerald1@wyo.gov

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This email was sent to denise_germann@nps.gov using GovDelivery Communications Cloud on behalf of: Wyoming Game & Fish Department · 5400 Bishop Blvd · Cheyenne, WY 82006 · (307) 777-4600

--

Dave Gustine, PhD
Supervisory Wildlife Biologist
Grand Teton National Park
Moose, WY 83012
dave_gustine@nps.gov
307-739-3485

Re_ Game and Fish Commission Passes Resolution ...(1).pdf

From: Mike Wrigley
To: Jennifer Carpenter
Cc: Powers Jenny; Adema Guy
Subject: Re: Game and Fish Commission Passes Resolution on Grand Teton Mountain Goat Removal
Date: Tuesday, January 21, 2020 8:44:24 AM

Please keep us in the loop of developments as NRSS back in DC is very interested. This is high profile. Let us know if we can assist.

Mike Wrigley
Wildlife Conservation Branch Chief
NRSS / National Park Service

> On Jan 17, 2020, at 3:54 PM, Jennifer Carpenter <jennifer_carpenter@nps.gov> wrote:
>
> Thanks, Kristen! We have been looped in at the RD level and I've spoken to Gopaul several times.
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> Thanks,
> Jennifer
>
> Sent from my iPhone
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> > Wildlife Biologist
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--

Dave Gustine, PhD
Supervisory Wildlife Biologist
Grand Teton National Park
Moose, WY 83012
dave_gustine@nps.gov
307-739-3485

Re_ Game and Fish Commission Passes Resolution ....pdf

From: Philbrook, Kristen
To: Jennifer Carpenter
Subject: Re: Game and Fish Commission Passes Resolution on Grand Teton Mountain Goat Removal
Date: Tuesday, January 21, 2020 9:38:18 AM

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good to know, thank you!

Kristen Philbrook
Wildlife Biologist
NPS Regional Office Serving Interior Regions 6,7 & 8
Lakewood, CO
(303) 969- 2168
Kristen_Philbrook@nps.gov

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--

Dave Gustine, PhD
Supervisory Wildlife Biologist
Grand Teton National Park
Moose, WY 83012
dave_gustine@nps.gov
307-739-3485

Fwd_ Volunteer information.pdf

From:	Sauvajot, Raymond
To:	Raymond Vela
Cc:	Shawn Benge; Jennifer Wyse; Janice DeSordi
Subject:	Fwd: Volunteer information
Date:	Tuesday, January 21, 2020 11:07:24 AM
Attachments:	NPS VIP Culling (2).pdf 11-1192-2013-01-09.pdf BRD_Elk_mgt_vol (1).pdf Briefing Statement GRCA Bison October 2019 FINAL.docx

---

Hi David,

As requested, attached are the documents we sent to Gopaul. If you have any questions or would like other information, just let us know.

Thanks,

Ray

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Raymond M. Sauvajot, Ph.D.
Associate Director
Natural Resource Stewardship and Science
National Park Service
1849 C Street, NW
Washington, DC 20240

202-354-6992 office
202-480-5652 mobile

ray_sauvajot@nps.gov

---------- Forwarded message ---------
From: **Wyse, Jennifer** <jennifer_wyse@nps.gov>
Date: Tue, Jan 14, 2020 at 9:04 AM
Subject: Volunteer information
To: Noojibail, Gopaul <gopaul_noojibail@nps.gov>, Jeremy Barnum <jeremy_barnum@nps.gov>
Cc: Raymond Sauvajot <ray_sauvajot@nps.gov>

Hi Gopaul and Jeremy,

It was good to talk with you yesterday. I'm experiencing some challenges with gmail this morning (all attempts to add attachments to this email have failed), so here is a link to a google drive folder (https://drive.google.com/drive/folders/1DBXvHmpyhTJ2_nFAwgEQLrcSyamd8ILd) with the following documents:
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

1. An overview of the use of volunteers to cull wildlife
2. A copy of WildEarth Guardians v. NPS
3. A paper that analyzed the use of volunteers at ROMO and GRTE
4. Most recent GRCA bison briefing statement

An excerpt from the court case re: the distinction between a cull and a hunt is pasted below. Also pasted below are the definitions of hunting and culling from the ROMO plan, which were upheld by the court. If you decide to pursue translocation and/or the use of volunteers, Jenny Powers and Mike Wrigley in the Biologic Resources Division would be good people to talk with, and I'm sure they would be happy to assist.

Good luck with your upcoming meeting and please let us know if you have any questions or need additional information.

Have a great day, Jen

****

Jennifer Wyse
202-513-7205

In the opinion for the case at Rocky Mountain National Park (Wild Earth Guardians v. National Park Service, see attached), the court upheld the NPS decision to use skilled volunteers based on the efforts of the NPS to ensure that the elk reduction activity was a cull and not a hunt. The court found that:

> *The more plausible distinction between hunting and management killing is the one advanced by the NPS: namely, that the difference between permissible management killing, or culling, and impermissible hunting is that the latter is the recreational pursuit of game for meat and sport, with incidental management effects on game populations, while the former is the closely supervised killing of game to control its population.*

In the Rocky Mountain National Park elk management plan and EIS, hunting and culling were defined as stated below. These definitions were reviewed and upheld in court.

> *Hunting is a recreational activity that includes the elements of fair chase and personal take of the meat, as well as being a conservation tool. Hunting is administered by the state fish and game agency, which licenses hunters. If areas of the park were to be opened to hunting those areas would need to be closed to visitor use while hunting was taking place. The NPS would need to absorb the costs of managing hunters, visitors and media during a hunt.*
>
> *Culling is used as a conservation tool to reduce populations that have exceeded the carrying capacity of their habitat. As opposed to hunting, culling is done under very controlled circumstances in order to minimize impacts on park operations, visitors, private inholdings and neighbors. Culling is also an efficient and humane way to reduce herds of animals that are habituated to the presence of humans. Culling is not recreational and does not incorporate the concept of fair chase. Culling would be administered by the NPS and carried out by NPS personnel and their authorized agents, and would not require licensing by the state. The personnel doing the shooting would be responsible for killing and processing several animals in any session. Carcasses from*

culling operations would be tested for chronic wasting disease and to the extent possible carcasses and/or meat would be donated through an organized program to eligible recipients, including members of tribes, based on informed consent and pursuant to applicable public health guidelines. Short-term road closures (a few hours most likely early in the morning) could be needed while culling activity is ongoing.

NPS VIP Culling (2).pdf

On the Use of Public Volunteers to Cull Wildlife in the National Park System

The purpose of this document is to assist and support National Park Service (NPS, Service) managers who are considering implementation of wildlife culling operations where public volunteers will participate in associated stewardship actions. This guide is not meant to prescribe the activities for any specific NPS unit. Instead, it describes the breadth and depth of issues which should be considered and decided upon at the local level. There is no one public volunteer culling model that will fit perfectly for every park. There are, however, lessons learned which may be helpful to other units in the system. Consulting with other NPS managers who have been through this process is strongly encouraged as is partnering with state wildlife management agencies and neighboring land management agencies whenever practical and appropriate.

Background

The NPS is unique among federal land management agencies in its mandate regarding hunting. Unlike the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS), NPS lands are closed to hunting, except where it is specifically authorized by Congress. There are approximately 76 (of 417) NPS units open to hunting, most of which are named as National Preserves, National Seashores, or National Recreation Areas. None of the units named as National Parks have public hunting (though one, Grand Teton National Park, has a statutorily mandated elk reduction program that temporarily deputizes state licensed hunters for elk reduction but is not technically considered a "hunting park").

This long standing legal requirement of prohibiting public hunting in national park units has resulted in the NPS managing overabundant wildlife in a variety of alternate methods through the last century. It is important to acknowledge that in the first 30 years after establishment of the Service in 1916, many wildlife populations, particularly ungulates, were at historically low levels as a result of market hunting, habitat degradation, and unregulated sport hunting in the late 19th and early 20th centuries. As populations of ungulates began to recover in the mid-20th century, the NPS and other land managers recognized that increasing populations were having significant negative impacts on vegetation and other natural and cultural resources. The NPS began to cull mule deer and elk using NPS and state wildlife agency personnel in some western parks as early as the 1930s, and this practice continued through the 1960s. In 1963, an NPS advisory board chaired by A. Starker Leopold released a report that stated that "A national park should represent a vignette of primitive America" (Leopold p.3) and "Above all other policies, the maintenance of naturalness should prevail." (Leopold p.6) These ideas were both formally and informally adopted by the NPS and governed the management of ungulates for almost 30 years. The concepts of allowing nature to run its course and minimizing active population management were applied throughout the Service. But the Leopold Report also contained the following recommendation: "as removal programs (for wildlife) increase in size and scope, the NPS may find it advantageous to employ or otherwise engage additional shooters from the general public" (Leopold p.14). This advice was not followed during the 40 year period from the mid-1960s to the mid-2000s.

By the late 1980s and early 1990s, NPS managers at many parks were aware of significant issues with increasing populations of white-tailed deer in the East and elk in the West. There were significant documented impacts on ecosystems and park resources, risks to public health and safety, and frustration among neighboring land owners. Managers grew concerned about continuing this "hands off" policy of wildlife population management. In the mid-1990s NPS again initiated culling by agency personnel or hired contractors, such as the USDA/Animal and Plant Health Inspection Service/Wildlife Services.

Other alternatives for reducing effects of ungulates and protecting park resources were often considered during planning efforts and in a few specific cases were implemented. These options include translocation, predator restoration, wildlife fertility control, and fencing to protect vulnerable plant species. At the present time, only fencing is used on a regular basis. Until recently, there has been little

direct public involvement in wildlife management actions on NPS lands other than through the public planning process. However, in the past 10-15 years, there has been increasing public and state wildlife agency support for direct public involvement in removal of excess wildlife from NPS lands. In 2009, Rocky Mountain National Park, and in 2010, Theodore Roosevelt National Park, began using public volunteers to assist with elk culling and in 2016 the NPS compared and contrasted these two programs. For additional information on these projects see Natural Resource Report NPS/NRSS/BRD -2016/1119.

The Service found that implementing public volunteer programs to cull wildlife generated significant support from some constituencies such as state wildlife agencies, rural communities, and sportsmen; however, these types of programs also generated negative responses from anti-hunting groups and some traditional NPS visitor support groups. The fiscal costs are highly variable and depend on the specific logistics of each program. At Theodore Roosevelt NP, the cost per animal was less when the public was engaged than when agency culling was used alone. At Rocky Mountain NP, all animals were taken by volunteers and therefore it was difficult to compare costs of agency only versus volunteer culling. The recommendations to other parks considering this option include: thorough public outreach efforts, site specific analysis of biological and social issues, and a cost benefit analysis by NPS leadership including the political gains and liabilities.

The use of public volunteers is primarily relevant to NPS units where public hunting is not authorized by law. In NPS units open to hunting, it is generally less expensive, more efficient, and more politically acceptable to use public hunting seasons following consult with the relevant State, and with or without state coordination on implementation, in order to achieve the necessary removals to achieve resource management goals. However, there may be certain situations where the NPS might choose to use public volunteers in a hunting-authorized unit; this could include situations where there is no public hunting season available for a specific species, or recreational harvest is not effective due to lack of interest, timing, coordination or other regulatory or social reasons.

Laws

There are multiple federal statutes, regulations and NPS policies relevant to the use of public volunteers in National Parks as a means of reducing wildlife populations.

54 U.S.C. § 100101(a), also known as the "NPS Organic Act," gives the Service the authority to "promote and regulate the use of the National Park System by means and measures that conform to the fundamental purpose" of its units, "which purpose is to conserve the . . . wild life and provide for the enjoyment . . . in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations". This is a clear mandate from Congress that the NPS has authority over wildlife on its lands, except as otherwise specifically provided by federal statute. This is an important distinction between NPS and other federal land management agencies, such as the Bureau of Land Management (BLM) and the US Forest Service (USFS) where authorities for wildlife management are not as clear and where certain actions, such as management of many wildlife populations have been relinquished to state wildlife agencies.

In addition, 54 U.S.C. § 100752 allows NPS to "provide for the destruction of such animals and plant life as may be detrimental to the use of any System unit". This law allows the NPS to develop and implement programs to destroy native or non-native animals that it deems to be detrimental to the fundamental needs of a specific unit. Historically this has been used to support reduction or elimination of non-native and invasive species, but it also supports reduction of native species, and in particular ungulates like mule deer, white-tailed deer, and elk in situations where they have exceeded ecological or social carrying capacity and have negative impacts on park resources.

Finally, 54 U.S.C. § 102301 gives the NPS the authority to "recruit, train and accept the services of individuals without compensation as volunteer for or in aid of other activities in and related to System units and related areas". Historically these volunteers have focused on interpretive and visitor functions; however, their use in other activities, such as wildlife management, has also occurred. These three federal statutes form the legal basis and authority for the NPS to manage wildlife and also to engage the public as volunteers to assist in situations where populations need to be reduced for ecological, social, and other reasons.

Regulations

NPS regulations at 36 CFR § 1.4 contain definitions of wildlife and hunting that are relevant to wildlife management, and 36 CFR § 2.2 contains NPS's prohibition on hunting except in units with specific statutory authorization for it, as well as additional provisions applicable to hunting. However, these regulations apply primarily to visitor activities, and not to NPS management actions. Wildlife reduction falls under the regulatory exemption for administrative activities carried out by NPS, 36 C.F.R. § 1.2(c), and as a result it is not directly subject to these regulations. Finally, 43 CFR §24.4 addresses resource management on Department of the Interior lands. Paragraph (5) requires consultation with states on a number of actions including "the planned and orderly removal of surplus or harmful populations of fish and wildlife". However, there is an exception that says consultation is NOT required "when the Secretary determines that such compliance would prevent him [or her] from carrying out statutory duties". Consultation can be accomplished through formal National Environmental Policy Act (NEPA) planning processes or through informal meetings and dialog.

Policies

There are no specific policies in Management Policies 2006 that directly deal with the use of public volunteers for wildlife culling. However, Section 7.6.1 discusses a variety of activities in the Volunteers in Park (VIP) program yet only mentions wildlife culling in the context of interpretation and education. Section 4.4.2.1 *NPS Actions that Remove Native Plants and Animals* is applicable as it supports removal of native animals only when it can be done without unacceptable risks to native resources, natural processes, or other park resources. This section also specifically allows for the removal of native wildlife "by NPS personnel or their authorized agents." It further states that when such removals occur the "destroyed animals may be left in natural areas" and allowed to decompose unless there are circumstances where carcasses should be removed for human health, safety and other reasons. This policy further states that live animals or carcasses may be removed from parks according to applicable laws, regulations or agreements, including preferences for Native Americans.

Differences Between Culling and Hunting

As discussed above, the destruction of detrimental animals as part of NPS wildlife management activities, or culling, is governed by different authorities than public hunting of wildlife by park visitors. It is important for NPS managers to be aware of the distinctions between the two and to consistently manage and refer to them as distinct activities.

NPS received some guidance on these distinctions in a 2011 decision by the U.S. District Court for the District of Colorado that rejected a challenge to the elk management plan at Rocky Mountain National Park (*WildEarth Guardians v. National Park Service*, 804 F. Supp. 2d 1150 [2011]). The plaintiffs in that case argued in part that NPS's use of public volunteers to cull elk violated the legal prohibition of hunting in the park. In rejecting that argument and upholding the NPS plan, the court discussed several key ways that the elk culling differed from hunting, namely: the **purpose** for destroying the animal, the **manner** in which the destruction occurred, and the **disposition** of the animals that were killed. First, culling is done exclusively for conservation and stewardship purposes, while hunting is done primarily for recreation or

procuring food. Second, culling is conducted under controlled circumstances under the supervision of NPS personnel, while hunting is performed at the hunter's discretion (subject to applicable licensing and laws) and with elements of "fair chase". Finally, hunting allows and most often requires the person taking the animal to keep the meat, while culling does not. The court's opinion finished with the following: "put simply, culling serves the public purpose, while hunting serves both public and private purposes".

The U.S. Court of Appeals for the Tenth Circuit later affirmed this decision in an opinion that for most purposes is more legally authoritative, 703 F.3d 1178 (10th Cir. 2013), but because it did not discuss the distinction between culling and hunting in the same detail, the District Court opinion remains a useful source of guidance on that point. It is not entirely binding on NPS actions—culling programs do not necessarily need to mimic the Rocky Mountain National Park elk plan in every detail—but culling that follows the principles discussed can be seen as more likely to withstand any potential legal challenges.

Maintaining these distinctions between recreational hunting and culling is thus a critical aspect of instituting a public volunteer reduction program. There are other aspects of these distinctions that NPS managers should be aware of.

Licensing: All recreational hunting in the U.S. requires a state issued hunting license (the only exceptions may be damage control on private lands for certain species [some of which are not classified by states as wildlife]). There is no requirement that public volunteers on NPS lands not open to hunting have a state issued hunting license. In fact, culling appears less like hunting if no license requirement is mandated by the NPS. Some states that are partnering in these programs may desire the NPS to make this a requirement, but it may not be prudent as it can blur the distinction between hunting and culling. In addition, most states require a hunter education certificate (issued by states after taking a course) before a hunter can purchase a license. Parks might consider this option as one of the multiple requirements for prospective public volunteers. It gives the NPS knowledge that the person applying has had some firearms and safety training. However, requiring a hunter education certificate does not mandate requiring a state hunting license for culling purposes. The most important aspect of this concept is that volunteers have the skills necessary to perform the culling operations. These skills can be evaluated in a variety of ways (see *Volunteer Selection* section below).

State Regulations: Most hunting occurs in the U.S. under a series of laws and regulations that dictate criteria that hunters must follow. These include limits on the species and number of animals that may be killed, seasons for specific species, types of weapons and ammunition allowed, safety clothing, and fair-chase rules, among others. It may be important for the NPS **not** to fully follow the state regulations for the species that the NPS is culling. For example, NPS may not follow state limits on the number of animals that can legally be removed, whether as a daily or season restrictions, if they interfere with NPS's management goals or decrease the efficiency of culling efforts. In many situations there are opportunities for one shooter to kill multiple animals and achieve culling goals more quickly and efficiently than if the NPS were to follow applicable state rules. State wildlife agency rules or laws that regulate safe hunting activities, such as blaze orange, shooting from or across public roads, and carrying loaded weapons in vehicles should be considered by parks as potential safety measures that could be adopted for culling programs. The NPS must be considerate of stewardship goals and objectives when designing their project implementation plan.

Fair-Chase: Fair-chase is a philosophy that governs and limits the use of certain tools that would make hunting easier and give hunters a distinct advantage. Laws and regulations regarding fair-chase are not consistent between states. Techniques that fall outside of fair-chase may include the use of aircraft, vehicles and lights to kill wildlife, hunting over bait, hunting in situations where wildlife is artificially constrained by fences, and the use of electronic devices to attract targeted wildlife to certain areas. However, many of these tools and techniques might be valuable to aid the NPS and public volunteers in the efficient reduction of targeted species. Under a culling program the principles of fair-chase are not

applicable, and may run counter to the overall goals of the program. Two techniques that parks have used are the use of bait to attract animals to areas that are safe and convenient for culling, and the use of radio-collars to identify animal locations for more efficient culling operations.

Table 1: *Park attributes*

	ROMO	THRO	WICA	HAVO	EVER
Species	Elk	Elk	Elk	Non-native Mouflon sheep	Non-native reptiles
National vs state volunteer selection	National	National	State	National but mostly local	National but mostly local
State hunting education course required?	No	No	Yes	Yes	No
Hunting license required?	No	No	No	Yes	No
Meat distribution through the state?	Yes	Partially	Yes	No	N/A
Shooting test required?	Yes	Yes	Yes	No	N/A
VIP agreement required?	Yes	Yes	Yes	Yes	Yes
Criminal background check required?	Yes	Yes	Yes	No	Yes
Volunteer period	At least one season	5 days	5 days	1 day	At least 5 days in a 6 month period
Volunteer uses NPS firearm?	Yes	No	No	No	N/A
NPS or public supplied non-lead ammunition?	NPS	Public	Public	NPS and public	N/A
Meat distribution	Public lottery	Volunteers (through ND), tribes, charities (directly)	Volunteers (directly), charities and tribes (through SD)	Volunteer meat recovery person directly	N/A
Carcass storage	Commercial meat locker	Refrigerated truck on site	Refrigerated truck on site	N/A	N/A

Use of Volunteers in Parks to Cull Wildlife

There are five park units that currently or in the recent past have used public volunteers to remove wildlife (see Table 1). At Theodore Roosevelt National Park (THRO), Rocky Mountain National Park (ROMO), and Wind Cave National Park (WICA) three unique programs were used to kill elk. All three used members of the public to shoot elk and assist with dressing, cleaning, and storing the meat. Each program was different in the method of volunteer selection, the amount of training and supervision, the efficiency of removal, and the cost; however, they all worked closely with their respective state wildlife agencies to distribute the meat derived from these programs. At Hawaii Volcanoes National Park (HAVO) members of the public are brought into units where non-native Mouflon sheep removal is occurring. Two volunteers are given the opportunity to shoot and a third person can retain the meat from as many animals as the team can remove per day. A state hunting license is required at HAVO but not at the other parks where volunteers are removing wildlife. At Everglades National Park (EVER) members of the public can sign up as agents of the park to live capture Burmese Pythons and other non-native reptiles

and amphibians. Injurious wildlife is then placed in bags and collection bins within the park and park staff is responsible for analysis and disposition of the animals. A current Volunteer in Parks agreement is required in each of these parks to complete this work. Costs and staff time vary widely between parks and depend on how intensively the program is managed. To date, all programs where firearms are used have at least one NPS employee with the volunteers at all times.

Where might public volunteer culling be effective?

Engaging public volunteers to remove wildlife may be a useful tool in other NPS units. At the present time there are four parks that have ongoing formal NEPA planning processes that include an alternative to use public volunteers; these include Grand Canyon National Park (bison), Olympic National Park (mountain goats), and Great Sand Dunes National Park and Preserve (elk), Chesapeake and Ohio Canal, and Harpers Ferry National Historical Park (white-tailed deer). There are common biological, socio-political, and logistical attributes of parks that lend themselves to engaging public volunteers.

Biological environment

There should be documented adequate demonstration of the problem and impacts caused by overabundant wildlife species. Documenting effects of overabundant wildlife can take years of data collection and analysis and may require specific biological expertise. Some NPS units may not have this expertise on site and partnering with outside researchers (e.g., U.S. Geological Survey staff), the NPS Inventory and Monitoring Division, universities and contractors, is encouraged in order to assist with this biological evaluation. Or, as in EVER, the purpose of the volunteer program itself may be to acquire individual animals to aid in understanding the problem and developing an appropriate management strategy. These analyses may include habitat and vegetation assessments, loss of or damage to key indicator species, or potential impacts on species of special concern (e.g., threatened and endangered species and their habitats, local species of concern), or detection or removal probabilities of the target species itself. There should also be sufficient ecological and demographic information about the target population to make informed choices on how many animals, and of which sex and age class to remove to meet and sustain population management objectives. Finally, it is important to understand animal accessibility. Knowing wildlife distribution and abundance, what migration or movement patterns are, and when and to what extent they use NPS lands and their impacts, are critical.

Social environment

The use of public volunteers has many internal and external social issues that park managers should consider. This is a relatively new tool and NPS employees may not be comfortable or familiar with members of the public using firearms in parks or with the public being involved in activities that have traditionally been performed by NPS employees or other professionals. Despite these concerns, several National Parks, with internal as well as external support, have successfully implemented public volunteer culling programs.

Local, regional, and national stakeholders often have strong feelings about the benefits and detriments of using public volunteers to cull wildlife. Nationally, there are many pro-hunting and wildlife conservation organizations that support the use of public volunteers as a tool for wildlife management in the National Park System. Many of these groups have robust political support and have used their influence in various public processes to seek greater use of public volunteers. Conversely, there are a number of animal welfare, environmental conservation, and national park support groups that have expressed strong opposition to the use of public volunteers for culling activities as it closely resembles recreational hunting. As discussed above, NPS was sued by one such group over the Rocky Mountain National Park elk management plan, in part over the use of public volunteers. Parks considering the use of public volunteers should reach out to both sides of this issue and have an active program for stakeholder

engagement at the national and local levels; this is both to inform and prevent either side from diverting planning processes and decisions with political intervention.

At the local level, support for or opposition to public volunteers depends on a variety of factors; key among them are local government, local land-owners, and other constituents. All of these stakeholders should be well informed of decision making processes and be invited into the conversation. Urban and ex-urban constituents tend to focus concerns on safety issues, effects on visitation and local economies, as well as placing more emphasis on animal welfare issues. In contrast, rural constituents often have concerns about impacts to private property and agricultural interests. Additionally, they tend to focus on impacts on local hunting opportunities. This was the situation at Theodore Roosevelt NP in North Dakota where there was great public interest in elk culling opportunities that was compounded by few opportunities for elk hunting in the state. If there are ample hunting opportunities locally there may be less demand from hunters and state wildlife agencies for using public volunteers. This was the scenario at Rocky Mountain NP where there is a great deal of public hunting available for elk in the state and thus less interest to participate in controlled culling activities. Likely the best source of information regarding local hunting communities will be state wildlife agencies. They work with and know this constituency well and can provide key information to parks regarding the potential interest from the state hunting community. In addition to local hunting interests parks should be aware of the concerns of local landowners, be they private, county, state or federal and ensure that their opinions are taken into consideration prior to making decisions.

In addition to understanding national and local publics, it is important to understand the how culling operations are perceived in light of societal ethics. For example, considering whether females have dependent young at the proposed culling time (e.g., April-August for most ungulates) is important. If it is necessary to remove females during this time consideration should be given to removing their offspring as well. Similarly, due to animal welfare concerns significant effort should be made to minimize wounding losses. Finally, culling of male animals, such as buck deer or bull elk is often necessary to achieve population goals and to mitigate habitat issues. If so, then a good solution is to wait until antler drop, if possible. This reduces the perception that trained volunteers are targeting trophy males and thus reducing desirable public hunting opportunities outside of NPS boundaries.

Logistical constraints

Funding

On-the-ground logistics and personnel experience often dictate the nature of the volunteer program. Recent volunteer programs have been resource intensive, both in terms of costs and employee time. Specific costs for implementation of two elk culling programs has been analyzed and can be found in Natural Resource Report NPS/NRSS/BRD -2016/1119. Future programs may be more efficient and less expensive depending on the intensity of the culling effort and the level of oversight individual parks find necessary. Pursuing funding for implementation at the same time as finishing planning compliance will make removal operations more expedient.

Timing

The timing of trained volunteer actions depends on many variables. Removal periods should be prioritized based on efficiency of removals and optimizing safety for staff and volunteers while minimizing impacts to other park visitors. One important factor is deciding whether or not removal efforts will be in conjunction with hunting seasons outside the park. In some situations efforts are coincident so as not to create a refuge situation either inside or outside of the park and therefore maximize efficiency. Alternately, it may be necessary to cull animals during the summer months when volunteers can most effectively access backcountry habitat but most public hunting is not available. Similarly, it is important

to consider if it is possible to differentiate males and females easily at the time of year considered for removal operations. Generally, it is desirable to focus on removal of females if the goal is population reduction or stabilization. Additionally, it is often perceived more favorably by stakeholders if females rather than males are removed, particularly in situations where there is public hunting focused on male harvest adjacent to NPS properties. However, there are instances where it may be more important to remove males, such as when there is disease that carried or shed more often by one sex.

Time of day

Most wildlife species are more active in early morning and late evening and thus these can be productive times to focus culling efforts. These are also periods that may not correspond to peak visitor use. Depending on local conditions, night culling over bait and with lights or night vision optics can be very effective and this time may avoid visitor conflicts. However, night removal raises safety issues and needs to be carefully coordinated. By using stands or specific shooting areas and not allowing volunteers to randomly move around after dark, safety concerns can be mitigated. During all of the public volunteer removal operations conducted to date volunteers operated during daylight hours.

Location

Depending on the species and park terrain, culling locations will vary significantly. Site selection criteria should include areas where animals are readily available and at a density that allows for adequate efficiency. When the target species is white-tailed deer, an animal with a relatively small home range, culling can usually be done in any portion of the home range and should be targeted to areas that are distant from high visitor use. Use of tree stands and bait can significantly increase culling success. Conversely, elk and other large ungulates are often migratory and may not stay in a park year-round; thus culling should occur when animals are available and concentrated in the park. Given the direction already noted to avoid times with dependent young, this may constrain available locations.

Culling is more efficient if there is relatively easy access for trained volunteers to access the targeted species. Use of radio-telemetered sentinel animals (i.e., Judas animal) can increase efficiency when locating groups of herd based animals. Requiring lengthy walking to access culling areas and remove carcasses can reduce efficiency, though may be necessary (wilderness areas). Theodore Roosevelt NP packed quartered animals out of the backcountry in backpacks and via pack horses whereas Wind Cave NP used ATV/UTVs to remove entire intact carcasses. Rocky Mountain NP gutted the animals at the kill site and sledded carcasses short distances to the road by hand. Hawaii Volcanoes NP had moderate hikes to access Mouflon carcasses that were brought out in backpacks. In addition to the level of difficulty in accessing animals and carcasses, wilderness regulations add to the complexity and analysis. Without access to motorized vehicles, efficiency will be decreased in most situations.

Parks should also consider impacts to other visitors. Closing areas to public use during culling operations may be warranted. Theodore Roosevelt NP and Wind Cave NP closed the backcountry to visitor use during the culling operations whereas Rocky Mountain NP did not close areas but conducted low intensity operations at times when visitors were not typically present. At Hawaii Volcanoes NP, in units where culling occurs limited visitation is allowed but only during non-culling times. Potential visitor closures are often controversial and should be considered during the planning processes.

Volunteers

Selection

Selection of public volunteers who have the skills and attitude necessary for a successful culling operation is critical. First, the pool of potential volunteers from which to select must be identified. The NPS is a national organization and as such, one potential pool is all interested U.S. citizens. Depending on method

and intensity of advertising, this may create a large pool of potential applicants and may be difficult to manage. Theodore Roosevelt and Rocky Mountain NPs advertised nationally, through websites and other media outlets and Theodore Roosevelt NP in particular drew intense national interest, which added to the overall cost of managing the program. In contrast, Wind Cave NP, in cooperation with South Dakota Game Fish and Parks (SDGFP), used only the SDGFP hunter data base as the potential applicant pool. Because South Dakota restricts elk hunting to only residents this restricted the pool to in-state hunters. This decreased the cost of volunteer selection. Early on at Hawaii Volcanoes NP, there was national advertisement and interest in of the program. However, after the initial 8 years, the park took a break to implement a planning process and since then has focused on local advertisement and meeting the interest of local communities although the program remains open to any U.S. citizen who meets the requirements. Similarly, Everglades NP has focused on local residents with knowledge of constrictor snakes and maximizing effective participation over time. They used word-of-mouth and the park website to build a network of volunteers who are willing to return multiple times but the program remains open to anyone who meets the requirements.

In some situations, an efficient system may be to use a state data base of hunters who have an expressed interest in the targeted species; however, this then requires that a person be a state licensed hunter in order to be considered and may not be perceived as a fair process by non-hunters or people from other states. Conversely, an NPS derived selection process that extends beyond state boundaries may be more defensible given that the National Park System is managed for all members of the public. There are no known legal constraints regarding local, state, or national selection processes, nor have there been any specific challenges to date in existing NPS public volunteer culling programs.

Beyond geographic location of potential volunteers, a method of evaluating and selecting volunteers based on their skill sets and attitudes towards culling, hunting, and conservation is a critical need. This may include a shooting proficiency test, self-certifications of fitness and/or skill in meat processing, oral/written interviews by NPS staff to determine experience of the volunteer, demonstration of these skills prior to allowing a volunteer to participate, and/or on the job training. A method of confirming a volunteer's eligibility to possess a firearm under the Gun Control Act (1968) and Lautenberg Amendment (2001) is required (e.g., criminal background check, Lautenberg certification). Different methods have been used at each park. The most intense screening process was at Rocky Mountain NP, which required an extensive written application, criminal background check, in-person interviews including their personal views of conservation and hunting, and a shooting test. Additionally, they required two days of classroom training and one day in the field as a dry run. Conversely, at Theodore Roosevelt NP there were no in-person interviews. Self-certification of physical capabilities and an on-site shooting test were the only requirements in addition to a half-day classroom orientation. Despite these self-certifications there was significant drop-out due to physical limitations and failure of the shooting test (~20-25%). More intensive screening processes and training add to program costs. The amount of training and screening needed may be a function of the complexity of the program and the level of controversy that culling has generated among stakeholders, as well as site-specific safety issues. This will need to be decided on a park by park basis.

Supervision

Clearly, evaluation and encouragement of skills related to knowledge and use of firearms, killing and dressing large animals, and working in a team environment takes tact and experience on the part of NPS employees functioning as volunteer supervisors. Employees who are supervising volunteers using firearms to cull wildlife must have high skill levels in these fields themselves which often means they may have traditional hunting backgrounds or have participated in wildlife culling in the past. Additionally, they must have high levels of maturity, excellent interpersonal skills, and enthusiasm for leading people by demonstrating a good example. Supervisors must also know what to do in the event of a medical emergency; therefore basic or backcountry first aid and CPR are important skills. Finally, an

excellent working relationship between direct supervisors and other NPS staff, particularly law enforcement and interpretation, may facilitate positive outcomes if there is a human-related emergency in the backcountry. Given the diverse nature of these operations, NPS staff with both biological and visitor safety backgrounds are needed to coordinate a successful program.

Supervision of volunteers can be intensive or extensive. For example, at Rocky Mountain NP, the Incident Command System was employed during public volunteer operations; whereas at Everglades NP volunteers work unsupervised by NPS employees. To date, when firearms are used at least one NPS employee has directly supervised 1-4 volunteers. Depending on the difficulty of finding animals, the terrain that is covered, fitness of the volunteers, difficulty in removing meat safely from the field, and circumstances surrounding visitor safety, different parks may require more or less supervision. In most parks volunteers also help with data collection and dressing and processing meat. It is important for supervisors to emphasize the importance of accurate data gathering and hygienic meat processing techniques as many volunteers may not have experience in these areas.

Those public volunteers who have a positive relationship with their VIP supervisors and view their culling experience as beneficial often become long term advocates and ambassadors of the Park and the NPS (Natural Resource Report NPS/NRSS/BRD -2016/1119). Volunteers with the time and means to engage in these types of programs are most often members of the local or at least regional communities. They often return to the park and engage in other volunteer opportunities such as vegetation monitoring, data collection, or wildlife surveys. To date, the overwhelming majority of volunteer experiences have been positive and they are eager to share their experiences with others in their communities. They bring legitimacy to the culling programs by telling their communities the reality and dispelling the myths of the culling programs. They often speak with the press or on social media sites and can tell their stories publically, again validating the NPS programs and their wildlife management and stewardship goals. The positive nature of their stories is most often directly related to their experience in the culling program. When the supervisor made them feel useful, engaged, and a valued member of the team, their stories often reflect this. The unique nature of the experience also adds to the affirmative feedback that volunteers give. Therefore, selecting the appropriate supervisors is of utmost importance.

Method of take

There are a variety of weapon types available to cull wildlife. This decision should be based on a number of factors including: the targeted species, safety, noise issues, and efficacy of the weapon. Tolerance for wounding issues and local social norms surrounding firearms will also influence this decision.

Only non-lead ammunition should be used in culling operations per Director's Memo dated March 4, 2009. This policy is to protect human and wildlife health, reduce impacts on the environment and minimize spent lead in soil entering the food chain via scavenging. While non-lead ammunition may be more difficult to find and more expensive to purchase than traditional lead bullets, it is an NPS requirement in culling activities. Volunteers may not be familiar with using non-lead ammunition. Parks can offer to provide non-lead ammunition to volunteers to use in personally owned weapons, or they can provide standardized weapon and ammunition combinations to volunteers. Alternately, parks can require volunteers to bring their own weapon and ammunition of appropriate caliber. Requiring the use of NPS firearms provides a level of consistency but may be a burden to participants as most volunteers already own and are most comfortable with their own weapons. There is a significant cost to parks if they decide to purchase and maintain weapons for culling and this may not be necessary to ensure program success (see Table 1).

Rifles

High powered, scoped, center fire rifles are generally the most efficient tool for culling large ungulates. They have a greater range, greater killing power, and widespread availability that make them a logical choice. The high accuracy and killing power make them more efficient and effective than other weapons and there is less wounding loss. However, bullets can travel long distances, more than a mile in certain situations, therefore it is important to know the backdrop and final disposition of the bullet if the target is missed. In urbanized or high use areas this can create safety concerns. Restricting the use of rifles to certain areas or requiring volunteers to be located in stands or against safe backdrops can dramatically reduce risk, but it also limits efficiency. Rim fire rifles (.22 caliber) are generally not a viable tool for culling ungulates. They do not have enough power to efficiently kill larger animals (white-tailed deer and larger) and can still travel distances up to one mile; therefore, their use is not recommended. Appropriate caliber and grain of ammunition is species and environment dependent. State wildlife agencies often have requirements for caliber and grain for a given species that may be adopted by parks. Other sources of information on ammunition size are available from NPS law enforcement personnel and from other parks that have engaged in culling, either internally or with the public. Semi-automatic high powered rifles are legal to use in many states; however the number of bullets allowed in magazines varies by state. For safety reasons, it is recommended that parks consider adopting rules consistent with state law that restrict the total number of bullets available in both the magazine and chamber.

Shotguns

Shotguns shooting either a slug or large shot (00 buck shot for example) are highly effective in killing larger animals, in particular white-tailed deer, but are limited by their effective range. In general, shotguns are effective up to 75-100 yards. In certain situations like forested environments they can be an effective tool for culling. They may be particularly useful in situations where houses, campgrounds, or other human activity occur in the general area. Shotgun slugs will generally not travel more than 300 yards. There are numerous situations where shotguns have been used by hunters to effectively reduce white-tailed deer in urban and ex-urban locations. They are most effective when used in conjunction with tree-stands and over baited areas. In nearly all situations 12 gauge shotguns should be used, as smaller gauges such as 16, 20 or 28 are not typically effective for large mammals. Non-lead shotgun slugs and buck shot is generally widely available.

Muzzleloading rifles

These weapons have similar capabilities to 12 gauge shotguns but are much less efficient as they shoot only one round and then have to be reloaded. Given this reduced efficiency they should not be considered for culling.

Archery

Archery equipment has evolved in recent years and has become more efficient with the use of compound bows. Archery is effective up to 50-70 yards and arrows tend to travel less than 150 yards in most situations. Given these parameters archery could be utilized by public volunteers in specific situations where animals are found in close proximity to developed areas. Generally, archery is most efficient when combined with the use of blinds or tree stands and efficiency is maximized for culling if done over bait. Another potential benefit of archery is the lack of sound impacts as compared to firearms. One significant drawback of archery is that wounding loss is increased and wounded animals may leave the park and not be recovered. Additionally, archery is less efficient than other methods given the time it takes to shoot multiple arrows and may not be appropriate for large body size animals such as bison. The park must considered volunteer skills and animal welfare aspects in this type of weapon use.

Carcass disposition

While retention of meat is not required by law or NPS policy, it is consistently an important ethical consideration when deciding on the disposition of the culled animal. State wildlife agencies, the general public, and NPS staff generally agree that using the meat for human consumption is a positive outcome from a culling operation (Natural Resource Report NPS/NRSS/BRD -2016/1119). NPS's authority to "provide for the destruction" of detrimental animals also allows for disposition of the remains of these animals, whether it is via meat donation to state wildlife agencies, charities, tribes, or individuals or to dispose of the carcasses in other ways such as decomposition on the landscape or left for scavenging or through the use of landfill, incineration, or alkaline digestion. All options are available for disposition of carcasses. Parks should be aware of the cultural and political sensitivities of methods which appear to waste edible meat or otherwise discard what may be culturally valuable portions of the carcass. While there is no legal prohibition against allowing a volunteer to keep an animal the VIP culls or its meat, it is important to note that this weakens one of the distinctions between volunteer culling and hunting (as discussed above).

In general, there is strong support for salvaging valuable portions of the carcass and making them available to tribes, charitable organizations, or volunteers. State wildlife agencies often want the volunteers to be able to retain the meat. To date, parks have generally worked closely with states for meat distribution. At Rocky Mountain NP, the carcass became the property of the state once it was loaded into a truck for transport to a meat locker. At Theodore Roosevelt NP some meat was donated to the state and this was in turn donated to the volunteers and the remainder of the meat was directly donated to tribes or food banks. At Wind Cave NP, most meat was donated to the state which distributed to charities and the rest going directly to volunteers. At Hawaii Volcanoes NP, meat is salvaged by a third volunteer who is not part of the culling operation and the meat is directly retained by this person. At Everglades NP, once the animal was dispatched by NPS personnel, a full necropsy is performed, data collected, and the carcass returned to the environment to decompose. Disease and toxins must be considered when planning for disposition.

Non-edible portions of animals such as antlers, horns, and hides are often desired by public volunteers and by tribal interests for ceremonial reasons. The retention and donation of these products can be controversial and also make for a less efficient cull. Removing these from the field takes additional time and effort and can reduce time spent in actual culling. However, in some situations, parks may find it advantageous to allow some of these parts to be removed and donated to specific groups or to volunteers depending on local situations. Generally, photographing volunteers in "trophy poses" is discouraged.

Public health

Once a decision has been made to donate all or portions of carcasses it is important to maintain good meat handling protocols to prevent contamination or spoilage. The U.S. Public Health Service (USPHS) has Public Health Consultants stationed within parks throughout the nation as well as a Public Health Veterinarian stationed within the Biological Resources Division of the Natural Resource Stewardship and Science directorate. These staffs are available to consult on regular basis with parks wanting to maintain meat in a condition that is appropriate for human consumption. [Note: at the time of writing Captain George Larsen (george_larsen@nps.gov) stationed at Yellowstone National Park is the USPHS employee with the most expertise in this area.]

It is important to cool an animal as quickly as possible after death to maintain meat quality. This usually means removing the organs of the animal in the field. Depending on ambient temperatures, field removal options, data collection and disease testing needs, and storage options this may mean deboning the animal in the field and putting meat in game bags or it may mean removing the entire animal from the field either whole or in quarters. Processing should be efficient and focused on keeping meat from being

contaminated with fecal or gut material as well as dirt and other debris. Knives should be kept clean. Meat can also be cleaned at a later time during processing but should always be handled with care and attention. Exact requirements for holding temperatures and best management practices for meat donation should be discussed prior to project implementation with USPHS staff. Finally, there are a wide range of options for donation of meat. The entire carcass, carcass without entrails, skinned and quartered carcass, deboned meat, or fully processed and packaged meat can be donated. Logistics and meat holding times will depend on the resources available (i.e., refrigeration trucks, meat lockers, meat processors, individuals doing their own meat processing, state cooperation, etc.). Meat derived from wildlife resources is not U.S. Department of Agriculture inspected and there is no guarantee of meat quality. Recipients should be made aware of this. There is, however, an expectation that products donated by the NPS are known to not be harmful or detrimental to human health.

Disease testing

There is only one disease, chronic wasting disease (CWD), which is routinely tested for in culled and donated wildlife species. Most cervids (deer, elk, and moose) are tested prior to donation. This testing is performed to better understand and surveil for the disease in wildlife. It is not a food safety test. However, if an animal is tested for CWD it should not be donated until after the test results are available. While CWD is not known to affect humans, positive carcasses should not be donated for human consumption. A meat donation waiver that accompanies meat from CWD endemic areas is strongly recommended and should list the precautions that have been taken to prevent CWD from entering the human food chain. Other diseases may be tested for depending on local conditions at the park. Any animal that appears sick at the time of culling or has abnormal lesions observed at butchering should be removed from the human food chain. Disease testing is never for food safety and does not guarantee a safe product. If an animal is found to have lesions either during butchering or during a field necropsy it should be submitted for further evaluation through a veterinary pathology laboratory or through the NPS Biological Resources Division-Wildlife Health Branch. (Contacts can be found at the Wildlife Health Branch website)

Summary

Engaging public volunteers in the removal of wildlife from NPS units is a relatively new and novel management and stewardship approach that a few parks have utilized. It is important to emphasize that this is not a one-size-fits all management option. There are no exact requirements for this kind of a volunteer program, but it is necessary to follow Volunteer Program Guidelines and Requirements. The best outcomes generally occur when a clear biological need has been demonstrated, when there is good communication and cooperation with state wildlife agencies, when animals can be reasonably accessed by members of the public in a safe and efficient manner, when visitor use is minimally impacted and when NPS staff understands the process and logistics of killing and processing animals. Park staffs need to balance safety concerns for volunteers, staff, visitors, and the public with animal welfare issues and overall program efficiency. These factors need not be weighted equally and the optimal balance will depend on site-specific circumstances. For example, direct supervision of public volunteers can increase safety and decrease animal welfare concerns but may not be warranted if highly skilled volunteers are chosen. Alternately, in Eastern parks in ex-urban landscapes, it may be necessary to have higher levels of NPS supervision.

In summary, the following concepts should be considered when implementing an NPS public volunteer culling program:

- Public perception of NPS professionalism and credibility is important for program success. Public volunteers culling wildlife is a new management tool that is likely to be highly scrutinized from a

wide variety of viewpoints. It will be important to be transparent about our programs and thoughtful about implementation practices.

- Animal welfare is important to the public and to the NPS and should be considered in all aspects of project planning and operations.
- It is important to use an adaptive management approach to a program that engages public volunteers. This is a management action that should be evaluated like any other responsible and well informed management action at the park. This means gathering biological, technical, and economic data on the program as it occurs and periodically evaluating whether or not it is meeting NPS management goals.
- Consistent communication is critical. The park should have a well-developed communication plan shared with park staff, the local community and other engaged partners such as the State.
- Ultimately, the most successful programs will optimize safety and efficacy.

Submitted by:

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For additional information please see:

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PUBLISH

UNITED STATES COURT OF APPEALS

TENTH CIRCUIT

WILDEARTH GUARDIANS,

Plaintiff-Appellant,

v.

NATIONAL PARK SERVICE,

Defendant-Appellee.

SAFARI CLUB INTERNATIONAL and SAFARI CLUB INTERNATIONAL FOUNDATION,

Intervenors-Appellees.

No. 11-1192

APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO
(D.C. NO. 1:08-CV-00608-MSK-CBS)

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Anna M. Seidman, Safari Club International, Washington, District of Columbia, on the brief for Intervenors-Appellees.

Before **KELLY**, **SEYMOUR**, and **TYMKOVICH**, Circuit Judges.

TYMKOVICH, Circuit Judge.

This appeal concerns WildEarth Guardians' challenge to the National Park Service's elk and vegetation management plan for Rocky Mountain National Park. WildEarth filed suit in federal district court challenging the plan and the final environmental impact statement the National Park Service (NPS) prepared in conjunction with the plan. WildEarth contends the NPS violated the National Environmental Policy Act (NEPA) by failing to include the reintroduction of a naturally reproducing wolf population as one of the alternatives considered in the environmental impact statement. WildEarth also challenges the agency's proposal to allow volunteers to assist the agency in reducing the elk population.

The district court affirmed the agency action, and WildEarth appealed. We find the record supports the agency's decision to exclude consideration of a natural wolf alternative from its environmental impact statement. We also find the agency's interpretation of the National Parks Organic Act and Rocky Mountain National Park Enabling Act persuasive, and that its elk management plan does not violate those statutes.

Accordingly, exercising jurisdiction under 28 U.S.C. § 1291, we AFFIRM.

I. Background

Rocky Mountain National Park (RMNP), located in northern Colorado, was established in 1915. The Rocky Mountain National Park Enabling Act (RMNP Act) bans hunting or killing wildlife within the park, with very limited exceptions. The park has always had a substantial elk population. But most elk predators, especially wolves and grizzly bears, were exterminated in the park area prior to its establishment, and Congress's decision to ban hunting in RMNP allowed the park's elk population to grow without constraint.

In the 1930s, the National Park Service (NPS) became concerned that the growing number of elk threatened the park's vegetation through overgrazing. In 1944, the NPS began to control the number of elk by relocating or killing them. This practice was the norm until 1969, when the NPS changed its elk management policy. The agency theorized that increased hunting in the areas around RMNP would sufficiently control the elk population, as elk tend to wander in and out of the park. This policy was not successful, however, as commercial and residential development near RMNP decreased the number of open spaces where hunting was allowed and RMNP's elk became habituated to residential areas. As a consequence, the number of elk in RMNP has more than tripled since 1969.

Several studies conducted in the 1990s found that the park's elk population is substantially larger, more sedentary, and more concentrated than it would be under natural conditions. As a result, elk overgraze much of the park's

vegetation, eliminating some plant species and making it difficult for others to regenerate. In response, the NPS decided it needed a new elk management policy for the park, both to reduce the overall number of elk and to make the population fluctuate from year to year, as would occur under natural conditions. The NPS expected this would also have a beneficial effect on the park's vegetation.

In August 2002, the NPS assembled an interagency planning team to develop a new elk management plan. The participating agencies included the United States Forest Service, the Colorado Division of Wildlife (CDOW),[1] and several nearby counties and municipalities, with the NPS designated as the lead agency.

In May 2003, the NPS published a notice in the Federal Register of its intent to prepare a new elk and vegetation management plan for RMNP and an environmental impact statement (EIS) for the plan. 68 Fed. Reg. 32,084-02 (May 29, 2004). The NPS solicited public comments through a variety of channels, including newsletters, a website, and public meetings.

The NPS received around 1,100 public comments on its proposal, which it used to develop a preliminary draft of alternatives for the management plan. In July 2004, the agency publicly released these draft alternatives. One of the

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[1] In 2011, the Colorado Division of Wildlife merged with the Division of Parks and Outdoor Recreation to become the Division of Parks and Wildlife. We refer to the agency by its old name, as all events significant to this appeal occurred prior to the merger.

proposed alternatives was reintroducing a self-sustaining wolf population to RMNP (the natural wolf alternative). The NPS convened a meeting of biologists and other experts in March 2005 to discuss the feasibility of the natural wolf alternative. And once again, the agency sought public comments on the proposed alternatives.

Based on the second round of public comments and feedback from its experts, the NPS selected four alternative plans for analysis in an EIS. In a publicly released August 2005 newsletter discussing these alternatives, the NPS announced it would analyze the introduction of a small number of intensively managed wolves into the park, in conjunction with the use of sharpshooters, but would not include the natural wolf alternative in its EIS. The agency explained this alternative was infeasible due to lack of support from coordinating agencies, concerns by neighboring communities, the high potential for human-wolf conflicts, and the likelihood that management of wolves in the park would be expensive and time-consuming, distracting from the goal of the NPS's plan—managing elk.

In April 2006, the NPS publicly released a draft EIS that considered five alternative management plans: (1) the current plan (the no-action alternative); (2) rapid reduction of the elk population, which the agency identified as its preferred alternative; (3) gradual reduction of the elk population; (4) a combination of managed killing and elk contraception; and (5) a combination of managed killing

and the introduction of a small number of intensively managed gray wolves. 71 Fed. Reg. 20,414-03 (Apr. 20, 2006). The draft EIS reiterated the NPS's reasons for excluding the natural wolf alternative.

The NPS again sought public comment on its draft EIS and held several public meetings during the comment period. The agency then considered the more than 3,100 comments it had received and prepared a final EIS.

The agency released its final EIS in December 2007. 72 Fed. Reg. 70,342-01 (Dec. 11, 2007). Although the agency had identified rapid reduction as its preferred alternative in the draft EIS, the final EIS selected a different alternative, gradual reduction. The final EIS also made a small but important change—expanding the definition of those who could assist the NPS with killing elk to include qualified volunteers. The final EIS also took pains to distinguish killing elk for management purposes, which it called culling, from hunting. The final EIS defined "culling" as a highly controlled method for managing an elk population and "hunting" as a loosely regulated recreational activity.

After the final EIS was released, WildEarth sought judicial review of the NPS's decision. WildEarth alleged the NPS acted arbitrarily and capriciously by excluding consideration of the natural wolf alternative from its EIS. WildEarth also alleged the NPS's decision to allow volunteers to participate in culling activities was tantamount to hunting, and violated the RMNP Act.

The district court entered judgment for the NPS, concluding the agency took a hard look at the relevant data and articulated a rational connection between that data and its conclusion that the natural wolf alternative was infeasible. The court also found the agency's distinction between hunting and culling was reasonable, and that the use of volunteers to assist in culling activities did not violate the RMNP Act.

II. Discussion

A. Standard of Review

We give no deference to a district court's review of agency action, reviewing its decision de novo. *Forest Guardians v. U.S. Fish & Wildlife Serv.*, 611 F.3d 692, 710–11 (10th Cir. 2010). But our review of the NPS's actions is considerably more deferential. We review the NPS's compliance with NEPA under the Administrative Procedure Act (APA), which authorizes us to set aside agency action only when it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." *Prairie Band Pottawatomie Nation v. Fed. Highway Admin.*, 684 F.3d 1002, 1008 (10th Cir. 2012).

When reviewing agency action, our task is to ensure the agency examined the relevant data and articulated a rational connection between that data and its decision. *Citizens' Comm. to Save Our Canyons v. Krueger*, 513 F.3d 1169, 1176 (10th Cir. 2008); *FCC v. Fox TV Stations, Inc.*, 556 U.S. 502, 513 (2009). Our deference to the agency is more substantial when the challenged decision involves

technical or scientific matters within the agency's area of expertise. *Morris v. U.S. Nuclear Regulatory Comm'n*, 598 F.3d 677, 691 (10th Cir.), *cert. denied*, 131 S. Ct. 602 (2010). Accordingly, we will not set aside an agency's decision unless:

> the agency (1) entirely failed to consider an important aspect of the problem, (2) offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise, (3) failed to base its decision on consideration of the relevant factors, or (4) made a clear error of judgment.

Forest Guardians, 611 F.3d at 711.

"Deficiencies in an EIS that are mere 'flyspecks' and do not defeat NEPA's goals of informed decisionmaking and informed public comment will not lead to reversal." *New Mexico ex rel. Richardson v. BLM*, 565 F.3d 683, 704 (10th Cir. 2009). And even if an agency violates the APA, this does not require reversal unless the appellant demonstrates prejudice resulting from the error. *Prairie Band*, 684 F.3d at 1008. As these principles imply, a "presumption of validity attaches to the agency action and the burden of proof rests with the appellants who challenge such action." *New Mexico*, 565 F.3d at 704.

B. NEPA

WildEarth's sole NEPA claim is that the NPS deviated from NEPA's required procedure by declining to consider the natural wolf alternative in its environmental impact statement. WildEarth argues the wolf alternative fit the

purpose and need of the proposed action, and thus required the NPS to consider it in an EIS.

Agencies must consider alternatives to any project that might have a significant effect on the quality of the human environment. 42 U.S.C. § 4332(2)(C)(iii). But agencies need not consider every possible alternative to a proposed action, only "reasonable" alternatives. 40 C.F.R. § 1502.14(a); *New Mexico*, 565 F.3d at 703. A "rule of reason" applies to an agency's decision to prepare an EIS, as well as the agency's choice of alternatives to include in its analysis. *DOT v. Public Citizen*, 541 U.S. 752, 767 (2004).

In other words, agencies are not required to consider alternatives they have "in good faith rejected as too remote, speculative, or . . . impractical or ineffective." *Custer County Action Ass'n v. Garvey*, 256 F.3d 1024, 1039 (10th Cir. 2001). "Alternatives that do not accomplish the purpose of an action are not reasonable, and need not be studied in detail by the agency." *Citizens' Comm. to Save Our Canyons v. U.S. Forest Serv.*, 297 F.3d 1012, 1031 (10th Cir. 2002) (internal quotation and citation omitted). Agencies must "briefly discuss the reasons" for eliminating unreasonable alternatives from an EIS. 40 C.F.R. § 1502.14(a).

WildEarth acknowledges that NEPA does not require an agency to consider impractical alternatives, but it argues the natural wolf alternative was practical. In particular, WildEarth points to studies, emails, and other documents in the

record discussing the benefits of this alternative. The evidence WildEarth points to falls into three broad categories: (1) evidence of the biological benefits of wolf reintroduction, such as studies concluding that wolves not only reduce the number of elk but also prompt elk to congregate in smaller groups and spend less time grazing any particular area, further reducing their impact on vegetation; (2) information about successful wolf reintroduction in Yellowstone National Park and Banff National Park in Canada; and (3) evidence discussing the feasibility of wolf reintroduction, including a 1994 survey showing that 70.8% of Coloradans support wolf reintroduction and a 2004 report by CDOW's Wolf Management Working Group that discussed the potential benefits of wolf tourism and an offer by an environmental group to compensate livestock owners for wolf predation.

While the record supports some benefits to a natural wolf option, that is not what guides us. What guides us is a rule of reason, where the agency explains its decision to take certain proposed options off the table because of a lack of practicality.

The NPS did that here. The agency found the natural wolf alternative would be impractical despite some marginal upside, and the record supports that decision. For example, wolf reintroduction may have been successful in Yellowstone and Banff, but the record reflects that those parks are not a good comparator for RMNP. RMNP is many times smaller than Banff and Yellowstone, and also much closer to residential and commercial developments at

the park entrances, plus it is near a heavily populated urban area, Colorado's Front Range Urban Corridor. The NPS determined RMNP has relatively little suitable wolf habitat due to its small size and abundance of steep, high-altitude terrain, which wolves dislike. And as a consequence of the lack of habitat and wolves' natural tendency to disperse, NPS experts predicted that any wolves in RMNP would be very likely to leave the park boundaries, prompting conflicts with neighboring communities. Such conflicts would likely include predation on livestock and pets.

All this would require intensive, costly management of wolves by RMNP personnel, diverting the park's resources and attention from the very problem the NPS is trying to address—elk overpopulation and degraded vegetation. And given RMNP's relatively small size and the near certainty that wolves would leave park boundaries, the NPS would need the cooperation of Colorado wildlife agencies to manage wolves outside the park, where the NPS has no jurisdiction. Yet CDOW was unwilling and unable to do so. To add to the complexity of the proposal was the fact that the gray wolf species is endangered, lending a level of state management not required of other species. *See* Colo. Rev. Stat. § 33-2-105.5 (prohibiting any state or local agency from reintroducing threatened or endangered species into Colorado without authorization from the legislature).

WildEarth argues the NPS should not have considered CDOW's lack of support when determining the feasibility of the natural wolf alternative.

WildEarth reads federal regulations to require NPS to ignore CDOW's opposition when determining which alternatives to include in its EIS. 40 C.F.R § 1502.14(c) (requiring agencies to consider alternatives otherwise outside their jurisdiction in an EIS). We disagree with WildEarth's broad reading of § 1502.14(c). This regulation is intended to prompt agencies to consider otherwise appropriate alternatives that the agency lacks jurisdiction to authorize. *See Sierra Club v. Lynn*, 502 F.2d 43, 62 (5th Cir. 1974). But it is not meant to force an agency to consider alternatives rendered infeasible by the actions of another agency.

If the NPS concluded the natural wolf alternative was infeasible because it could not bring wolves to RMNP without CDOW's permission, then 40 C.F.R. § 1502.14(c) might require the NPS to include that alternative in its EIS if the alternative were otherwise feasible. But that is not the case. The NPS could bring wolves to RMNP with or without CDOW's approval. But without CDOW's cooperation in managing wolves outside RMNP's boundaries, the NPS estimated wolf reintroduction was unlikely to succeed. This is a question of feasibility, not jurisdiction. Consequently, the NPS did not violate § 1502.14(c) by excluding the natural wolf alternative from its EIS.[2]

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[2] The NPS's consideration of another alternative, the limited use of wolves in conjunction with sharpshooters, demonstrates the proper application of 40 C.F.R. § 1502.14(c). The NPS would need the permission of the United States Fish and Wildlife Service (USFWS) to reintroduce wolves into RMNP because gray wolves are a federally listed endangered species. *See* 16 U.S.C. § 1539(j) (permitting reintroduction of an experimental population of an endangered species

(continued...)

In addition, WildEarth fails to support its claim that the NPS's March 2005 meeting on the feasibility of the natural wolf alternative was somehow improper, a "shadow process" that excluded the public from participating in the consideration of this alternative in an EIS. Op. Br. at 28. WildEarth suggests representatives from CDOW's Wolf Working Group attended the meeting and influenced the NPS to drop the natural wolf alternative from its EIS, but the record does not support this assertion. Records from the meeting show only one CDOW representative in attendance, who gave a presentation on chronic wasting disease in elk. WildEarth cites nothing in the record establishing that any other CDOW representatives were at the meeting, let alone that the CDOW attempted to improperly influence the agency or any other attendees.[3]

On the contrary, the record reflects that the attendees at the March 2005 meeting were all scientists from the NPS and other institutions and agencies, including the U.S. Fish and Wildlife Service (USFWS), Colorado State

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[2](...continued)
only with the Secretary of the Interior's permission and only where "such release will further conservation of such species"). The NPS included consideration of a limited wolf reintroduction in its EIS, in compliance with § 1502.14(c), despite the uncertainty of obtaining this permission.

[3] The record evidence WildEarth cites to support its claim does not actually do so. WildEarth cites an email from a USFWS biologist to an NPS biologist expressing his opinion that wolf reintroduction in RMNP would not succeed and would create more problems than it would solve. This email only briefly mentions CDOW's opposition, and does not mention the March 2005 meeting.

University, and Banff National Park. The workshop notes reveal that the assembled experts expressed many doubts about the feasibility of the natural wolf alternative. For example, the experts concluded: "there would be no control over where the wolves would go once they left the park," "[m]anagement, wolf control and compensation expense would be higher than other wolf options," "[m]ore time spent managing external issues rather than managing to meet the objectives," and "[p]otential to harm wolf restoration efforts in other areas if an attempt in [RMNP] failed." Aple. Supp. App. at 1088. For these and other reasons, the experts concluded that "this option is not considered feasible or likely to be successful." *Id*. at 1032.

Agencies are entitled to rely on the opinions of their experts so long as these conclusions are not arbitrary and capricious. *Wyoming Farm Bureau Fed'n v. Babbitt*, 199 F.3d 1224, 1241 (10th Cir. 2000). WildEarth cites nothing establishing that this conclusion was arbitrary and capricious. Instead, WildEarth attacks the credentials of the assembled experts, pointing out that although the experts were mostly biologists, their conclusions addressed the social implications of wolf reintroduction. We are not sure the conclusions drawn at the meeting are so easily categorized, but even if we agree with WildEarth that they were social, there is no indication the experts were unqualified to draw these conclusions. Nine of the eleven presentations given at the workshop were on biological topics, such as wolf reproduction and the effects of wolf reintroduction on elk and

willow in Yellowstone. But two experts gave presentations on social issues, and WildEarth presents no evidence the experts' conclusions were outside their areas of expertise.

Further, WildEarth argues that, while agencies are entitled to rely on their experts, they cannot exclusively rely on expert opinion without allowing for public comment. Relying on *Ctr. for Biological Diversity v. Morgenweck*, 351 F. Supp. 2d 1137 (D. Colo. 2004), WildEarth argues the NPS should not have made a decision about the natural wolf alternative until its EIS was complete, as NEPA requires agencies to gather information about an alternative through the EIS process. *Morgenweck* dealt with a petition to list an endangered species. *Id*. at 1143. *Morgenweck* held that when the USFWS receives such a petition, the Endangered Species Act and associated regulations require the agency first to determine whether the petition is meritorious on its face, and then to gather information about the status of the species, in part by soliciting public comments. *Id*. *Morgenweck* found that the USFWS improperly solicited input from select state and federal agencies when determining whether the petition was meritorious, which was proper only during the information-gathering phase, and only by seeking public comments, not by privately contacting select parties. *Id*.

Morgenweck is not applicable here. NEPA does not prohibit an agency from gathering information from outside sources, as well as its own experts, to determine whether an alternative is feasible and thus a candidate for analysis in

an EIS. *See, e.g.*, *WildEarth Guardians v. U.S. Forest Serv.*, 828 F. Supp. 2d 1223, 1237–38 (D. Colo. 2011) (holding the Forest Service did not act arbitrarily and capriciously by relying on the expertise of an outside agency to exclude from its NEPA analysis a proposal submitted by WildEarth). And unlike the USFWS in *Morgenweck*, which did not solicit public comments and instead privately contacted select parties, the NPS here solicited two rounds of public comments on its proposal before eliminating the natural wolf alternative from further consideration.

Again, NEPA requires agencies to analyze only *reasonable* alternatives in an EIS. 40 C.F.R. § 1502.14(a). Agencies are not required to analyze infeasible alternatives so long as they articulate the reasons supporting their decisions. *Id*. The NPS followed NEPA by articulating the reasons for its decision to exclude the natural wolf alternative from its EIS, and those reasons find support in the record. Thus the agency complied with NEPA's required procedure.

WildEarth concludes by pointing to several emails and other internal communications from NPS employees expressing the opinion that the natural wolf alternative would be feasible, or at least should be included in the EIS. But the fact that some individual NPS employees believed the natural wolf alternative should be included in the EIS does not demonstrate that the agency ignored its own experts or inexplicably changed its mind. WildEarth cites no evidence showing this was a consensus view, rather than a recommendation from a few

individual employees. Even if some NPS employees held this view, a diversity of opinion by local or lower-level agency representatives will not preclude the agency from reaching a contrary decision, so long as the decision is not arbitrary and capricious and is otherwise supported by the record. *See Nat'l Ass'n of Home Builders v. Defenders of Wildlife*, 551 U.S. 644, 659 (2007). The NPS cites ample evidence supporting its decision, including the consensus opinion of the experts at its March 2005 meeting. Even the evidence WildEarth cites identifies factors both supporting and undermining the feasibility of the natural wolf alternative. Accordingly, WildEarth has not demonstrated that the NPS ignored its own experts when it decided to exclude the natural wolf alternative from its EIS.

Finally, it is worth reiterating that the NPS continued to consider wolves as a management tool at RMNP even after it eliminated the natural wolf alternative from its EIS. The agency included a modified wolf alternative in its EIS, combining a more limited role for wolves with the use of sharpshooters to cull elk. WildEarth suggests this alternative is not a substitute for the natural wolf alternative at least in part because these wolves would be sterilized, but this is not entirely accurate. Only the male wolves would be sterilized, and only at first. If wolves proved useful as a management tool and successfully established themselves in the park, they would later be allowed to breed. Under this plan, RMNP's wolf population would be more tightly regulated than under the natural

wolf alternative, but this conclusion is appropriate given that the NPS's goal was not to reintroduce wolves but to manage elk.

In sum, we find that the NPS met NEPA's requirements when it excluded the natural wolf alternative from its EIS. The agency discussed the reasons for its decision in a newsletter it released prior to its release of the draft EIS, in the draft EIS, and in the final EIS, as required by 40 C.F.R. § 1502.14(a). The agency drew a rational connection between these reasons and its conclusion by examining the data in the record, consulting experts at its March 2005 meeting on wolf reintroduction, and repeatedly explaining why it excluded the natural wolf alternative from its EIS. *Krueger*, 513 F.3d at 1176. This is all NEPA and the APA require.

C. RMNP Act

In its environmental impact statement, the NPS selected gradual reduction in the elk population as its preferred alternative for RMNP's elk management plan. The EIS also specified that qualified volunteers could assist the NPS in culling elk. The term "qualified volunteers" was defined to include members of the public who received special training in wildlife culling and firearms use and passed a proficiency test. WildEarth contends the use of volunteers transforms the NPS's culling into hunting, which is prohibited by the RMNP Act.

In making its determination, the NPS concluded the use of volunteers would not violate the RMNP Act because the volunteers would be culling elk, and

not hunting. The agency found that culling differed from hunting, which it defined as a loosely structured "recreational activity" including elements "of fair chase and personal take of the meat." Aple. Supp. App., Vol. III, at 676. In contrast, culling is a highly regulated and tightly controlled activity whose primary purpose is the "efficient and humane [reduction of] herds of animals that are habituated to the presence of humans."[4] *Id*. The agency took the position that

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[4] The full definitions from the final EIS are as follows:

> **Hunting** is a recreational activity that includes the elements of fair chase and personal take of the meat, as well as being a conservation tool. Hunting is administered by the state fish and game agency, which licenses hunters. If areas of the park were to be opened to hunting those areas would need to be closed to visitor use while hunting was taking place. The NPS would need to absorb the costs of managing hunters, visitors and media during a hunt.
>
> **Culling** is used as a conservation tool to reduce populations that have exceeded the carrying capacity of their habitat. As opposed to hunting, culling is done under very controlled circumstances in order to minimize impacts on park operations, visitors, private inholdings and neighbors. Culling is also an efficient and humane way to reduce herds of animals that are habituated to the presence of humans. Culling is not recreational and does not incorporate the concept of fair chase. Culling would be administered by the NPS and carried out by NPS personnel and their authorized agents, and would not require licensing by the state. The personnel doing the shooting would be responsible for killing and processing several animals in any session. Carcasses from culling operations would be tested for chronic wasting disease and to the extent possible carcasses and/or meat would be donated through an organized program to eligible recipients, including members of tribes, based on informed consent and pursuant to applicable public health guidelines. Short-term road closures (a few hours most likely early in the morning) could be needed while culling activity is ongoing.

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its use of qualified volunteers did not transmute its culls into impermissible hunts because the purpose and structure of the culls distinguished them from hunting, regardless of who participated.[5]

The RMNP Act provides in relevant part: "All hunting or the killing, wounding, or capturing at any time of any wild bird or animal, except dangerous animals when it is necessary to prevent them from destroying human lives or inflicting personal injury, is prohibited within the limits of [RMNP]. . . ." 16 U.S.C. § 198c. But the National Park Service Organic Act (Organic Act) states: "The Secretary of the Interior . . . may also provide in his discretion for the destruction of such animals and of such plant life as may be detrimental to the use of any said park. . . ." 16 U.S.C. § 3. The NPS argues its plan is permissible under § 3 and does not constitute hunting, so § 198c does not apply. WildEarth contends the NPS's plan involves hunting and violates § 198c.

As a preliminary matter, the parties and the district court evaluated the NPS's action under the deferential standard announced in *Chevron U.S.A., Inc. v.*

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[4](...continued)
Aple. Supp. App., Vol. III, at 676.

[5] In addition to the characteristics in the EIS definitions, the NPS indicated that its culls would focus on culling female elk, and the number and type of animals killed each year would vary depending on annual population surveys. Culls will not take place when the elk population is within a specified range. Cullers will operate under the supervision of an NPS team leader, will attempt to cull multiple elk in any given event, and will attempt to ensure the "humane dispatch" of targeted animals. *Id*. at 677.

Natural Res. Defense Council, Inc., 467 U.S. 837, 842–42 (1984), which we can apply when an agency interprets an ambiguous statute. But we do not automatically apply *Chevron* every time an agency advances an interpretation of a statute it administers. Whether *Chevron* applies "depends in significant part upon the interpretive method used and the nature of the question at issue." *Barnhart v. Walton*, 535 U.S. 212, 222 (2002) (citing *United States v. Mead Corp.*, 533 U.S. 218, 229–31 (2001)). We also consider the agency's expertise, the importance of the question to the agency's administration of the statute, and the degree of consideration the agency has given the question. *Id.* at 222. Although the presence or absence of notice-and-comment rulemaking or formal agency adjudication is also relevant, these factors are not dispositive. *Id*. When *Chevron* does not apply, we still defer to the agency, but only to the extent its reasoning is persuasive. *S. Utah Wilderness Alliance v. BLM*, 425 F.3d 735, 759 (10th Cir. 2005) (internal citation omitted).

In this case, the NPS's interpretation of the RMNP Act and Organic Act was not adopted as part of a formal rulemaking procedure or adjudication, nor is there any indication the agency considered its interpretation for any great length of time—it was announced only as a part of the final EIS. We do not know whether the NPS considers its interpretation binding for other purposes, despite the fact that this interpretation was announced in an EIS, after a formal notice-

and-comment procedure. But as we explain below, whatever deference we give to the agency, the NPS did not violate the RMNP Act.

1. The RMNP Act and Organic Act

The conflict is this: The Organic Act, 16 U.S.C. § 3, permits the killing of "detrimental animals" in national parks, but the RMNP Act, 16 U.S.C. § 198c, prohibits all hunting and killing of animals in RMNP, except animals that are dangerous to humans. The NPS argues that because it has not authorized hunting in the park, § 198c's hunting ban is irrelevant. WildEarth counters that the distinction between hunting and culling is illusory and § 198c prohibits implementation of the NPS's management plan.

The problem with both parties' arguments is that § 198c is broadly written, purporting to ban *all* hunting and killing of animals within RMNP. WildEarth does not argue that § 198c prohibits the NPS from killing animals in RMNP for management purposes; instead WildEarth argues that § 198c allows only the NPS to use its employees to trim herds and not volunteers. But the logic of WildEarth's interpretation would bar *any* plan by the NPS that involves "hunting, or the killing, wounding, or capturing" of animals in RMNP, § 198c, even if it does not involve the use of volunteers. Therefore we must determine whether WildEarth's interpretation of these statutes is correct.

"The starting point in every case involving construction of a statute is the language itself." *Blue Chip Stamps v. Manor Drug Stores*, 421 U.S. 723, 756

(1975) (Powell, J., concurring). Statutes must be read as a whole and in relation to one another. *United States ex rel. Sikkenga v. Regence Bluecross Blueshield of Utah*, 472 F.3d 702, 711 n.2 (10th Cir. 2006). When two related statutes appear to conflict, courts have a duty to construe them harmoniously and give each effect. *Morton v. Mancari*, 417 U.S. 535, 551 (1974). "The intention of the legislature to repeal must be clear and manifest." *Id.* (citing *United States v. Borden Co.*, 308 U.S. 188, 198 (1939)). Normally when two statutes conflict, we interpret the more specific statute as an exception to the more general statute. *United States v. Shewmaker*, 936 F.2d 1124, 1128 (10th Cir. 1991).

The Organic Act states that it applies to specific parks to the extent its provisions are not in conflict with any statute made specifically applicable to that park. 16 U.S.C. § 1c(b). WildEarth suggests this provision requires us to read § 3 as the more general statute and § 198c as the exception to that statute. Under this interpretation, § 3 applies in RMNP except to the extent it conflicts with the specific provisions of § 198c.

The problem with WildEarth's reading of § 1c(b) is that the RMNP Act incorporates § 3 and makes it specifically applicable to RMNP. 16 U.S.C. §§ 195 & 197. This suggests that § 1c(b) does not control our interpretation of §§ 3 and 198c because both provisions are specifically applicable to RMNP.

So we could plausibly interpret either statute as the more general provision, with the other as the exception. Interpreting § 3 as the general provision and

§ 198c as the exception, as WildEarth suggests, would allow the NPS to destroy detrimental animals in the park except through means prohibited by § 198c, namely "[a]ll hunting or the killing, wounding, or capturing at any time of any wild bird or animal, except dangerous animals when it is necessary to prevent them from destroying human lives or inflicting personal injury."

This interpretation is implausible because of § 198c's breadth; it bans both hunting and killing and does not exempt the NPS. Read literally, it would allow even the NPS to kill only "dangerous" animals. But animals can be detrimental to a park without being dangerous to humans, as RMNP's elk demonstrate. If § 198c prohibited killing detrimental but non-dangerous animals, it would effectively repeal § 3. Although this interpretation would still permit the killing of dangerous animals under § 3, it would make § 3 redundant, at least in RMNP, because § 198c also permits killing dangerous animals. We avoid interpretations that render a statute redundant. *Enfield ex rel. Enfield v. A.B. Chance Co.*, 228 F.3d 1245, 1250 (10th Cir. 2000).

WildEarth's interpretation would also make it almost impossible for the NPS to manage RMNP's wildlife. Because interpreting § 198c as an exception to § 3 would do just that, and because we presume Congress enacted § 198c with a knowledge of § 3,[6] *see United States ex rel. Boothe v. Sun Healthcare Group,*

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[6] The RMNP Act was first enacted in 1915, but § 198c was added in 1929. *See* Pub. L. No. 70-1009, § 4, 45 Stat. 1536, 1537(1929). The Organic Act,
(continued...)

Inc., 496 F.3d 1169, 1176 (10th Cir. 2007), we conclude § 198c does not create an exception to § 3.

Instead, § 3 is better interpreted as the more specific provision. Under this reading, hunting and killing wildlife is generally prohibited in RMNP, except in the case of dangerous animals (§ 198c) or detrimental animals (§ 3). This interpretation gives effect to both § 198c and § 3, allowing the destruction of both dangerous and detrimental animals, but otherwise prohibiting hunting and killing wildlife in RMNP.

But this does not end our inquiry. Section 198c contains two prongs: (1) hunting, and (2) killing, wounding, or capturing. WildEarth argues that any exceptions to § 198c apply only to the second prong, and not to the first.

Again, the text of § 198c guides us: "All hunting *or* the killing, wounding, or capturing . . . of any wild bird or animal, except dangerous animals . . ., is prohibited within the limits of [RMNP]" (emphasis added). WildEarth's argument is that the use of the disjunctive "or" and the placement of the dangerous animals exception after "killing, wounding, or capturing" suggests that Congress intended to allow the dangerous animals exception to apply only to the second prong but not the first. This, in turn, suggests that any exception we read into § 198c, namely § 3's detrimental animals exception, should also apply only

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[6](...continued)
including § 3, was enacted in 1916. *See* Pub. L. No. 64-235, § 3, 39 Stat. 535 (1916).

to the "killing, wounding, or capturing" of animals in the park because it shows Congress did not intend to create an exception to the hunting ban.

We agree that § 3 does not create an exception to the ban on hunting. To harmonize the statutes, as we did above, we read the dangerous and detrimental animals exceptions to § 198c to apply only to its prohibition on killing, capturing, or wounding animals, not to its prohibition on hunting.

With these statutory considerations in mind, we turn to the NPS's culling option.

2. Culling Versus Hunting

Having determined that § 198c continues to prohibit all hunting in the park and allows only for management killing—that is, the killing of dangerous or detrimental animals at the Secretary's discretion—we must discern what differentiates prohibited hunting from permissible management killing. WildEarth claims it is the identity of the party pulling the trigger. If an NPS employee shoots an animal, it is permissible management killing. It is not clear whether WildEarth considers an authorized contractor a permissible actor, but it strongly condemns the use of volunteer agents, regardless of the shooter's motives or whether he or she has the NPS's permission. The NPS, again, argues that the nature and purpose of the act determines whether an animal's destruction is hunting or management killing, not the identity of those who carry it out.

There is no support in the text of either § 3 or § 198c for WildEarth's position. Neither § 198c's hunting ban nor the exceptions to that ban are based on the identity of the party destroying the animal. Section 198c's hunting ban is universal, and the exceptions to the statute's killing, capturing, or wounding ban focus on the reason the animal is killed, rather than who kills it. Section 198c permits animals to be killed if they are dangerous to humans, and § 3 permits animals to be killed if they are detrimental to the park. And § 3 gives the Secretary discretion to determine how detrimental animals are to be destroyed.

Nor does WildEarth satisfactorily explain why, if NPS personnel can shoot an elk without it being considered hunting, the NPS's agents cannot do so, or can do so only if they are being paid by the NPS. Generally a principal can authorize an agent to perform any lawful act the principal can perform himself. *See Phillips Petroleum Co. v. Peterson*, 218 F.2d 926 (10th Cir. 1954); 2A C.J.S. *Agency* § 129 (2012). WildEarth never explains why an authorized and carefully supervised volunteer is not subject to this rule.

The more plausible distinction between hunting and management killing is the one advanced by the NPS: namely, that the difference between permissible management killing, or culling, and impermissible hunting is that the latter is the recreational pursuit of game for meat and sport, with incidental management effects on game populations, while the former is the closely supervised killing of game to control its population. This interpretation rests on the reason the animal

is being killed and is consistent with the text of §§ 3 and 198c. The identity or subjective feelings of the person pulling the trigger do not matter.

WildEarth argues this distinction is illusory, pointing out that some dictionaries define "hunt" broadly to include the general pursuit of wild animals or game. *Oxford English Dictionary* (2d ed. 1989) (defining "hunt" as "to go in pursuit of wild animals or game."). WildEarth also notes that the NPS's own regulations define "hunting" as "taking or attempting to take wildlife," and "taking" as "to pursue, hunt, harass, harm, shoot, trap, net, capture, collect, kill, wound, or attempt to do any of the above." 36 C.F.R. § 1.4(a). WildEarth argues that because NPS regulations define "hunting" very broadly, the agency should not be allowed to assert a narrower definition here.

While these definitions are broad, we do not see them as restricting the NPS's park management under § 198c. We agree with the NPS that these definitions were not intended to apply to § 198c. Section 1.4(a) states that its definitions "shall apply *to this chapter* [of the Code of Federal Regulations]. . ." (emphasis added), which chapter does not include § 198c. In fact, the regulations make no reference to § 198c, nor any other similar hunting restriction.

In addition, the regulatory definition of hunting in 36 C.F.R. § 1.4(a) is inconsistent with the text of § 198c and the interpretation WildEarth itself advances. As discussed previously, § 198c contains two prongs: one banning hunting, with no exceptions, and one banning killing, wounding, or capturing,

with two exceptions. The problem with the regulatory definition is that it defines "taking" as, among other things, "killing, wounding, or capturing," as well as "hunting." In other words, if we were to seriously apply the regulatory definition of "hunting" to § 198c, § 198c would have only one prong because "hunting" and "killing, wounding, or capturing" would be redundant. This in turn suggests that the § 198c exceptions would apply to all of § 198c, letting the NPS authorize hunting in RMNP to remove detrimental or dangerous animals. We suspect WildEarth would not agree with this interpretation, nor is it the better reading of the statutory text. *See Gustafson v. Alloyd Co.*, 513 U.S. 561, 574 (1995) (reminding courts to avoid interpretations of statutes that render some words redundant). In any event, the regulations themselves state they are not to be construed to prohibit the implementation of "approved general management and resource management plans." 36 C.F.R. § 1.2(d).

For these reasons, the definition of hunting in 36 C.F.R. § 1.4(a) does not control our interpretation of § 198c.

WildEarth's last argument is that the NPS's position is contradicted by its own personnel, who stated in various emails that allowing volunteers to participate in managed kills would constitute hunting. Specifically, WildEarth points to an email sent by an NPS biologist, who reported that an unnamed Interior Department attorney said during a meeting that using volunteers in a culling program could be de facto hunting.

This is not dispositive. At best, this is an informal, preliminary opinion by an individual employee, not a formal position adopted by the agency. Again, the fact that the NPS later adopted a different position does not mean that the agency acted arbitrarily and capriciously. *Nat'l Ass'n of Home Builders*, 551 U.S. at 659.

The record reflects that the NPS's elk management plan is meant to control the number of elk in RMNP. Elk will not be killed when they are within the target range. Culls will be closely supervised by NPS employees. Some cullers may enjoy the experience, but this is irrelevant so long as they kill elk for management purposes pursuant to the procedures and supervision of the NPS. The primary purpose of hunting is not for controlling a population of detrimental animals but for food and sport. Because the purpose of the NPS's plan is to control the population of the park's elk and their effect on vegetation, it is distinguishable from hunting, regardless of whether members of the public volunteer to participate in culls.[7]

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[7] In reaching this holding, we do not mean to suggest that the NPS may authorize hunting in RMNP simply by covering it with the fig leaf of population control. As discussed, § 198c unambiguously bars anyone from hunting in RMNP. The culls contemplated by the NPS in its management plan will be tightly controlled and are sufficiently distinct from hunting that they do not run afoul of § 198c's restriction. But § 198c would clearly prevent the NPS from creating a scheme similar to a state-regulated hunt by, for example, selling tags to licensed hunters and allowing them to freely roam the park every autumn to shoot elk, even if the agency's reason for doing so was to reduce RMNP's elk population.

III. Conclusion

For the foregoing reasons, we AFFIRM the order of the district court.

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National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science

Elk Management in the National Park Service

Two Case Studies in the Use of Public Volunteers

Natural Resource Report NPS/NRSS/BRD/NRR—2016/1119

ON THE COVER
Photograph of Elk on winter range at Rocky Mountain National Park.
Photo credit: National Park Service

Elk Management in the National Park Service

Two Case Studies in the Use of Public Volunteers

Natural Resource Report NPS/NRSS/BRD/NRR—2016/1119

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U.S. Department of the Interior
National Park Service
Natural Resource Stewardship and Science
Fort Collins, Colorado

The National Park Service, Natural Resource Stewardship and Science office in Fort Collins, Colorado, publishes a range of reports that address natural resource topics. These reports are of interest and applicability to a broad audience in the National Park Service and others in natural resource management, including scientists, conservation and environmental constituencies, and the public.

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Introduction

The National Park Service (Service, NPS) has a long history of ungulate management dating from its inception in 1916 (NPS 2014). As defined by the NPS Organic Act, the enabling legislation for the Service, the primary purpose of the bureau is to "conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 USC §100101). The NPS has authority to manage wildlife populations and habitats under the NPS Organic Act (16 USC 1, 2-4), the General Authorities Act, as amended (16 USC 1a-1 et seq.), and other authorities. NPS policies for wildlife management are set out in section 4.4 and other provisions of NPS Management Policies 2006 (NPS 2006).

At the time the Service was founded, many wildlife populations were in decline and there was a need to create protected areas where wildlife and their habitats could find refuge and protection from human exploitation (Wright et al. 1933). For example, portions of Yellowstone National Park's enabling legislation, from the 19th century prior to the Organic Act, specifically prohibit "all hunting, or the killing, wounding, or capturing at any time of any bird or wild animal, except dangerous animals, when it is necessary to prevent them from destroying human life or inflicting an injury, is prohibited within the limits of [the] park" (16 USC §26). Additionally NPS regulations state, "hunting shall be allowed in park areas where such activity is specifically mandated by Federal statutory law; [or] hunting may be allowed in park areas where such activity is specifically authorized as a discretionary activity under Federal statutory law" (36 CFR §2.2). This is a different mandate than that of other federal land management agencies such as U.S. Forest Service and Bureau of Land Management, where lands are typically open to hunting unless expressly prohibited and regulation of these practices are largely deferred to state wildlife management agencies. Most NPS units (~85%; NPS 2014) do not have specifically mandated or discretionary hunting allowed within their enabling legislation and thus remain closed to hunting. With more than 20 different potential designations for NPS units, areas open to hunting are not "parks" but rather are designated as preserves, seashores, lakeshores and recreation areas.

As wildlife populations recovered in the 20th century due to a variety of factors including the absence of top predators, changing wildlife regulations and abolishment of market hunting, ungulates, specifically those which thrive at the human-wildlife interface such as elk (*Cervus elaphus nelsoni*) and white-tailed deer (*Odocoileus virginianus*) became prevalent in many parks. In some cases the Service initiated this process by restoring elk (Sargeant and Oehler 2007) and deer (Wright and Thompson 1935) to habitats where they had previously been extirpated. In areas with appropriate habitat, lack of sufficient predators and protection from hunting, these species have often reached both ecological and social carrying capacity of parks and surrounding areas. In part due to changing societal attitudes and an influential report written for the Secretary of the Interior in 1963, the NPS incrementally adopted a policy of ecological or "natural" regulation in parks which strives to maintain or restore ecosystems to conditions that "prevailed when the area was first visited by the white man" (Leopold et al. 1963). With the exception of restoration of native species, an era of minimal intervention in wildlife management began in the late 1960s (Olliff et al. 2013) and until

recently has remained the overarching, although not explicitly expressed, paradigm in the NPS. During this time, park managers recognized the need for ungulate management to protect habitat, biodiversity, cultural resources, and the environment; however, there have been relatively few novel ways to mitigate effects of abundant ungulates, meet the mission and mandate of the NPS, and satisfy the social and political environments that parks operate within. While recreational hunting remains the primary management tool on most public lands, within National Parks techniques have historically been limited to trap and transplant, trap and euthanize, culling by government employees or contractors, or restoration of predators.

Two parks which have experienced this situation of locally high elk densities are Rocky Mountain National Park (RMNP) near the town of Estes Park, Colorado and the south unit of Theodore Roosevelt National Park (TRNP) which borders the town of Medora in western North Dakota. Both have restored native elk populations, neither park's enabling legislation authorizes hunting and both needed to address on-going or anticipated habitat issues caused in large part by elk herbivory. These two parks developed methods to use public volunteers to reduce elk populations. While both parks used volunteers to shoot and remove elk, each did so in different ways. The purpose of this investigation is to describe these two programs and to compare and contrast the ecological and sociopolitical drivers which led to using volunteers to remove elk in each park.

Background

Rocky Mountain National Park Elk Management

Rocky Mountain National Park (40.3333ºN, 105.7089ºW) is located in northern Colorado and covers 415 square miles which span the continental divide. Nearly 95% of the park is designated wilderness and wilderness character is an important part of management objectives. The park is in close proximity to major metropolitan areas on the Front Range of the Rocky Mountains including the Denver metropolitan area with a combined population of approximately 3.5 million people. The west side of the park is accessed through the town of Grand Lake, Colorado and is bordered by much less human development. The park receives more than 3 million visitors per year. Elk viewing is a major attraction for visitors to the park and the Estes Valley. The park is not fenced and wildlife moves freely across jurisdictional boundaries. Elk are hunted on the boundaries of RMNP on both public and private lands. While this is a locally important elk population in the state, it is not in the top 10 units in Colorado for either population size or harvest and thus not of statewide importance to the hunting public (Colorado Parks and Wildlife, 2015).

With locally significant impacts to habitat and corresponding biodiversity in RMNP and decreasing tolerance for high elk numbers in and around the town of Estes Park, RMNP engaged in a 5 year planning process (2003-2008) with the intent to restore the park vegetation to levels that would be expected with a more migratory, less sedentary and smaller elk population (NPS 2008). The Colorado Division of Wildlife and the Town of Estes Park were partners in the process.

After lengthy discussion and analysis at the local and national levels, there was agreement that culling was a necessary component to any logistically and politically feasible alternative. The idea and development of including members of the public to assist in elk culling was derived from inter-agency discussion and cooperation between, working group members, the Director of the Colorado Division of Wildlife (CDOW; now known as Colorado Parks and Wildlife) and RMNP Superintendent, senior NPS leadership and input from the Colorado Wildlife Commission, a citizen board appointed by the Governor to direct policy for the state wildlife agency.

It was important to the park and the NPS leadership that public volunteers would not be a proxy for hunters, as hunting is not legal in RMNP, and it was important to the CDOW that volunteers have the opportunity to shoot elk and at least some potential to retain meat, with the recognition that this was not a hunt in the manner offered by the state. These discussions occurred at the highest levels of each agency. This was the first time the NPS had used volunteers to cull animals and was a precedent setting event. Therefore, these two key areas of compromise resulted in development of the structure and function of the volunteer component of the elk management program at RMNP.

In February 2008, the final decision was made and the park began implementing its Elk and Vegetation Management Plan/ Environmental Impact Statement (the Plan) which consisted of fencing critical vegetation communities and slowly reducing the number of elk to achieve an elk population size of 600-800 in the park sub-population and 1,000-1,300 in the town sub-population (NPS 2008). Within the park, up to 200 elk could be removed annually for the lifetime of the Plan (~20 years). Most elk on the eastern winter range at RMNP are habituated to human presence and

are often easily accessed by roads, simplifying removal. Additionally, fences protecting up to 440 acres of willow and 160 acres of aspen could be constructed and aversive conditioning techniques could be used to re-distribute elk if needed to protect unfenced vegetation (NPS 2008).

During the planning stages and prior to implementing the Plan there were approximately 1,000-1,500 elk that used the eastern side of RMNP with densities of up to 110 elk/sq. km (Lubow et al. 2002). At the time the plan was implemented (2009-2011), there were approximately 400-700 elk using the RMNP winter range. At this time (2016) it is unknown exactly why the wintering elk population within the park has declined; however, there were likely multiple factors including redistribution to alternate winter habitat further east of the park (Loveland, CO area), a large elk harvest outside the park in the adjacent hunt unit during the 2006/2007 hunting season associated with heavy snowfall, historically low calf recruitment rates within the park (Lubow et al. 2002), relatively high mortality rate due to chronic wasting disease (Monello et al. 2014), and exclusion from prime winter habitat within the park due to fencing. While it is beyond the scope of this paper to explore the causes of population decline within the park, it is clear that the large elk population using the park prior to and during the planning process had decreased dramatically prior to implementing culling.

The park began culling elk in January 2009. During the fall of 2008, in close partnership with CDOW staff, the park advertised on RMNP and CDOW websites asking for public volunteers to assist with elk removal. The response was enthusiastic and more than 100 people submitted on-line application surveys. Applicants were screened on the basis of the background investigation results and their written self-assessments as well as oral interviews of knowledge and skill with firearms, killing and field dressing of large animals, conservation practices and philosophies, working with agencies and in a team environment, and their physical abilities or limitations. The park was clear with the public that volunteers were not hunters. Key distinctions included no hunting license requirement to participate, no direct meat retention by the volunteer and no expectation of a traditional recreational hunting experience (i.e., fair chase, self-selection of animals, self-regulation of state imposed rules, etc.).

All volunteers had to commit to being teammates, filling a variety of roles through an entire culling season (January – March) and had to be within commuting distance of the park. All culling teams were led by an NPS staff member. Each volunteer was given a shooting test. Only non-lead ammunition was used for qualifying and culling. If a volunteer did not pass the shooting test or did not want to volunteer in a shooting capacity they were allowed to remain in non-shooting volunteer positions such as carcass processing or providing interpretation for visitors. In addition to firearms training and qualification, each volunteer attended 2 days of classroom training and a 1 day dry-run operation in the field. Due to significant visitation during the culling period, legal challenges and intense public scrutiny, RMNP chose to implement a formalized operational structure that adheres to the Incident Command System (ICS, NPS Director's Order 55). Job duties fell within the ICS structure and required 16-17 people (8 volunteers and 9 agency personnel) to remove 1-2 elk per day (Fig. 1).

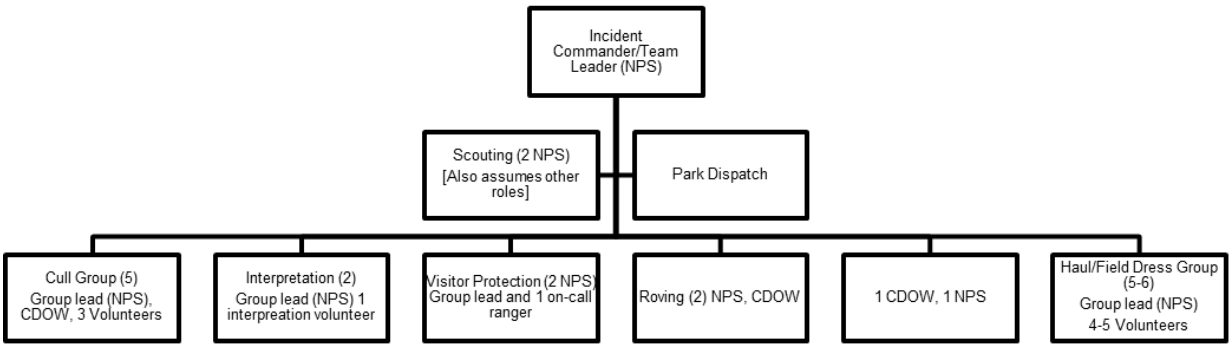

Figure 1. Team organizational structure and staffing for culling operations at Rocky Mountain National Park. Total of 16-17 individuals (8 volunteers, 9 agency personnel [7 NPS and 2 CDOW]) per culling operation per day to remove 1-2 elk.

Operations occurred in high visitation areas on the elk winter range without closing the park to visitors. The process was highly controlled; roads were temporarily closed and public access restricted in the immediate area of field operations by the team members, generally for periods less than 30 minutes. The actions were designed to have minimal impact to visitors, maintain elk viewing opportunities, have minimal impact on wilderness character, kill the elk as humanely and quickly as possible and maintain the meat for donation.

To have the greatest effect on population size and fecundity as well as maintain elk viewing opportunities, only female elk were targeted for removal. Female elk were identified in areas where there was a safe shooting backdrop, they could be easily removed via a hand pushed sled and where the area could be secured of visitors. Elk were not difficult to locate or approach. Shots were taken from 40-250 yards. A second shot was rarely required. The carcass was field dressed, biological measurements were taken and samples were collected for chronic wasting disease testing at the site. Upon moving the carcass to the road for transport, possession was transferred to CDOW and all costs incurred for carcass disposition were covered by the state. Meat was donated through a state run lottery system to members of the public if test results showed that chronic wasting disease was not detected. Volunteers were allowed to enter the meat lottery if they desired. Operations took an average of 1.5 hours per elk and 7-8 volunteers were involved in each removal.

Theodore Roosevelt National Park Elk Management

Theodore Roosevelt National Park (46.9667ºN, 103.4500ºW) is located in southwestern North Dakota within the Little Missouri River Badlands. The park consists of highly erodible badlands with gullies and ravines separated by upland plateaus and small erosion-resistant buttes (Laird 1950). Approximately 600,000 people come to the park annually, the great majority of who report wildlife viewing as a primary motive for visiting. There are 3 units of the park; however, only the south unit has a resident elk population. Adjacent to the town of Medora (permanent population of 100) and surrounded by 1.2 million acres of Dakota Prairie National Grasslands, this unit is approximately 72 square miles and completely fenced to prevent egress of bison (*Bison bison*) and feral horses (*Equus caballus*) which also reside in the park. Elk can pass freely over or under much of the fence but tend to spend most of their time within the park (Sargeant and Oehler 2007). Approximately 23% of the

park's south unit is wilderness. It is located in a predominantly rural area and the resident elk herd supports the majority of the hunted elk in the western half of the state. Through a competitive draw process, successful hunters are allowed an once-in-a-lifetime opportunity to harvest an elk on private or public land surrounding the park. There are also limited landowner depredation permits when elk cause damage to private property. The hunt is considered highly desirable and it is difficult to draw a license.

In 2002 an internal NPS policy pertaining to chronic wasting disease prohibited moving elk out of the park without extensive disease testing (NPS 2002). At that time, facing a growing elk population which could have impacts on vegetation inside the park and could exceed social carrying capacity outside the park, park managers began an Elk Management Plan/ Environmental Impact Statement (the Plan). The process took 6 years (2004-2010). Although the U.S. Forest Service (Dakota Prairie Grasslands) did not manage specifically for elk, they and the North Dakota Game and Fish Department (NDGFD) were instrumental in the initial elk reintroduction effort and therefore both served as cooperators on the Plan. At the time planning began, the park elk population was approximately 500 and there were no easily recognizable vegetation impacts due to excessive browsing or grazing; however, managers had to change allocations of bison and horses on the landscape to accommodate the growing elk population. The intent of the Plan was to be proactive in preventing resource damage rather than reactive to degradation that had already occurred. At the end of the planning process there were more than 1,200 elk in the south unit of TRNP. Reaching the population objective of 100-400 elk as quickly as possible was desirable to minimize cost and disturbance to park visitors and operations. During the planning process, a volunteer-based culling program was projected to take many years, require substantial funds to administer, expose the government to liability, and yield uncertain results in terms of meeting management objectives. Therefore, at that time this alternative was not likely to be chosen as the preferred action. The NDGFD advocated strongly for outcomes that involved the public, leading to a U.S. Senator from North Dakota contacting the Acting Director of the NPS asking for consideration of significant public involvement in culling elk from TRNP as part of the Plan.

The final decision was made in June 2010 and culling using public volunteers was the preferred method, although round up and euthanasia or live transfer remained an option if the population goals (e.g., removing an average of 250 elk/year) were not met in the first two years (NPS 2010). Between June and October of 2010 park staff developed a highly structured culling program and automated volunteer selection system. Volunteers were recruited from across the U.S. via the park website. Response was overwhelming. Over 5,000 people from 46 states applied and a sophisticated program was developed to select volunteers randomly from the pool. Approximately 200 volunteers participated each year, although there was less interest and a higher attrition rate during the second year. Potential volunteers self-certified in writing that they were capable of passing a shooting test using their own firearm and self-supplied non-lead ammunition. This was confirmed during a shooting test administered by NPS staff. If a volunteer did not pass the test they were asked to leave and could not participate in any portion of the culling activities. Volunteers also self-certified that they were capable of strenuous exercise and carrying heavy loads. Each volunteer was required to sign a volunteer agreement describing expectations and obligations as a team member and park

ambassador and pass a criminal background check. No state hunting licenses were required. Volunteers had to commit to one week during the culling season (October – December/January). The first day of each week 16-20 new volunteers came to the park and they were divided into 4-5 teams of 4 volunteers each (Fig. 2). Each team was led by a seasonal NPS employee who was skilled at locating, killing, field dressing and transporting elk out of the backcountry. Six hours at the start of each week were dedicated to volunteer education, training and firearms qualification.

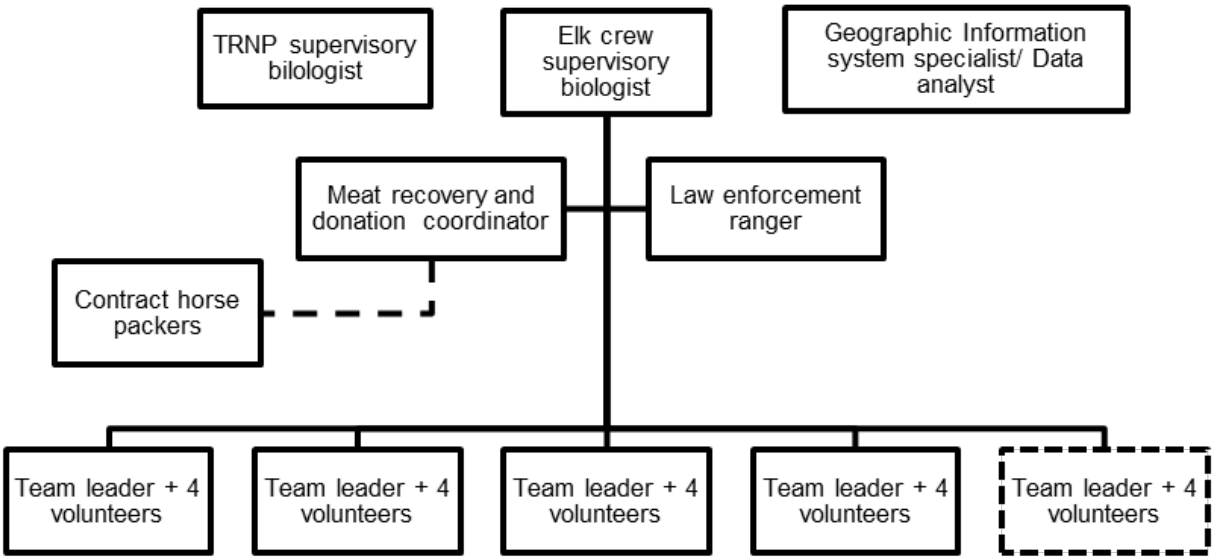

Figure 2. Team organizational structure for culling operations at Theodore Roosevelt National Park. Total of 25 individuals (20 volunteers, 5 NPS staff) for 5 culling teams per day (2010) or 20 individuals for 4 culling teams per day (2011) with an average of 12 elk taken per day.

The backcountry of the park was closed to visitors when culling occurred; however, this area does not receive high visitation during the winter months and little if any visitor disruption was reported or observed. Team leaders selected areas of the park where radio-collared locator elk (i.e., Judas) were located and had a GPS location of these elk each morning. Elk are not habituated within TRNP and generally occupy backcountry areas distant to humans and developed areas. Elk frequently occupied areas where strenuous hiking was required to reach them. Reduction teams spent 3 days per week killing as many elk as could be safely and effectively removed from the backcountry then meat was kept in refrigeration units throughout the week. Elk were killed by both volunteers and NPS team leaders. Moreover, team leaders would routinely fire a follow up shot if a volunteers' shot failed to quickly drop the elk. Team leaders controlled group movements and direction, indicating which elk to shoot, when to shoot, and how many elk would be shot from a group of animals. Primarily adult female elk were taken in the first 2 years of the operation and later sub-adult males and calves were taken to meet population objectives. Biological samples and extensive data were taken and recorded on hand-held data devices then elk were field dressed. Volunteers and team leaders backpacked meat out of the backcountry to refrigeration units at headquarters each day. If it was unsafe to pack the meat out via the team members, horse packers were contracted for assistance.

A portion of the meat was donated to NDGFD and if volunteers spent four days of their time (1 training day and 3 removal days) the state allowed them to take the meat of 1 elk home with them if the team had successfully removed at least 1 elk per team member, otherwise meat was divided equally among team members. NPS employees did not retain any meat. All remaining meat was donated directly to Native American tribes and to the North Dakota Community Alliance (state food bank) through North Dakota Sportsmen Against Hunger. All elk were tested for chronic wasting disease and none were found positive to date (2016).

Methods

Interviews

We conducted a series of interviews with key personnel from RMNP, TRNP, and from neighboring state wildlife agencies, specifically Colorado Parks and Wildlife (formerly known as CDOW) and the NDGFD. The intent of interviews was to reveal motivations leading to the structure and function of the elk removal programs at RMNP and TRNP, to quantify the perceptions of success and failure and to describe attitudes toward elk management at each park from both NPS and state wildlife agency personnel perspectives. We sought to identify common ideas and areas of disagreement between parks and state agencies and also between North Dakota and Colorado.

By phone and in person, we interviewed personnel (RMNP n=4, CDOW n=4, TRNP n=5, NDGFD n=2) who had significant involvement in the creation or implementation of the elk management plans at each park. Interviewees were from all levels of the organizations from field biologists to upper level management. We asked the same series of questions of each person to learn the key factors which determined the shape and structure of each plan and implementation process and to try to understand not only the technical aspects of their involvement but also their perception of the processes and outcomes. Interviews were not recorded but notes were taken and summarized. Interviewees had the opportunity to review and correct their interview summary. Main themes of interviews were identified by first 2 authors (Powers and Kahn) and discussed with other authors.

Economics and Structure of Elk Management Programs

Separate from the interviews, park personnel provided information on the economic implementation costs associated with using volunteers to remove elk in the respective parks and described the structure of each program. Costs accompanying the procurement of equipment and supplies, as well as volunteer selection, training, and supervision are included. Additionally, costs related to collaring Judas elk, if used, are also included in cost per elk removed. Elk population surveys, which are critical to achieving management objectives, are reported separately. Costs associated with compliance planning, research activities or other management actions are not included in cost per elk analyses.

Results

At RMNP, in January 2009 a total of 13 elk, in 2010 23 elk, and in 2011 16 elk were removed (52 total elk removed 1 male, 51 female) utilizing public volunteers. During the three years that culling occurred an additional 79 elk (n = 20, 25, 34 elk/yr) were taken for research purposes (Monello et al. 2014, Powers et al. 2014). Volunteers were not involved in the research portion of elk removal. A total of 33 field days were spent with volunteers from January 2009 – January 2011 and more than 2000 volunteer hours were donated for both the training and field operations. Training accounted for more than 800 volunteer hours. In 2012 and continuing to present, population surveys indicate that the elk population in the park (200-400) is below population objective (600-800) called for in the Plan and there has been no need to cull elk.

At TRNP, during the first (2010/11) and second years (2011) of the program 406 and 462 elk, were removed using public volunteers. Approximately 2-3 elk were culled per 5 member team per 8-10 hour day. Most of the animals removed (87%) were females. More than 400 volunteers contributed in excess of 12,000 hours supporting the reduction effort during these 2 years. This initial or "reduction" phase of the program was intended to reach the target population size (100-400). During the "maintenance" phase the population was intended to be controlled with relatively small amounts of effort by removing only the recruitment fraction of the population each year. This population goal was expected to take 5 years to achieve. At TRNP, the program was more successful than predicted, allowing population objectives to be met in just 2 years. During the third year the maintenance phase began and use of volunteers was evaluated annually (NPS 2010). In the first 3 years of this phase, elk were removed solely by NPS employees without the use of volunteers (n = 69, 46, 38 in 2012-2014 respectively). Maintenance phase removal efforts will continue throughout the lifetime of the plan (15-20 years) unless there is a change in population dynamics, habitat utilization, or elk survival within TRNP.

Interview Insights and Findings

Personnel from state wildlife agencies and the NPS had similar educational backgrounds in wildlife biology and natural resource management and often similar personal backgrounds and experience with hunting. However, their professional beliefs differed greatly. Most state employees had actively managed elk through hunting for most if not all of their professional careers. The common sense answer to having too many elk on the landscape for state agency employees was to open the area to public hunting. Conversely, most NPS employees had worked in an environment which promotes wildlife protection and preservation. If elk needed to be removed to protect their habitat then it should be done with ecological restoration of predators, when socially attainable, and if not with the fewest negative effects on park management, visitors and resources including the elk themselves. Both state and NPS employees approached the problem of too many elk with a firm understanding of their positions or outcomes for desired elk management methods but, as described by Fisher and Ury (1991) there was less clarity on the interests or underlying desires and concerns that motivated these positions.

The interviews revealed recognition that the elk at both parks are shared resources and both state wildlife agencies and NPS have joint management responsibility. Similarly, the overarching goal of managing a healthy free-ranging elk population was shared by state and NPS personnel at all levels. However, there was little flexibility expressed on either side to leave the stated positions of each agency and explore the breadth and depth of acceptable management actions to meet common interests. In general, the NPS personnel at both parks took a position that predator restoration was the most consistent resolution with NPS values but understood that there would be insufficient public, state, and political support to implement this action. Baring this option, they felt using members of the public to cull elk would be too laborious, expensive, and time-consuming to be a useful elk management tool. On the other hand, in North Dakota state employees took the position that traditional hunting was the desired management solution, while in Colorado, state employees had strong negative sentiments toward any option that did not incorporate public involvement and take of elk (e.g., they were strongly opposed to fertility control and wolf restoration). All sides felt strongly and were often philosophically tied to their position. Only when the interests, including needs, desires and goals, underlying the agency positions were expressed, most often between senior key decision makers, was substantial progress made toward resolving differences in what methods would be used to manage elk. This led to the evolution of use of public volunteers. The concept of volunteers met the fundamental NPS need to stay consistent with one of its mandates of prohibiting hunting in National Parks and met the states' need to be consistent with many of the principles described in the North American Model of Wildlife Management (NAMWM; Organ et al. 2010), specifically public access to wildlife trust resources and responsible use of the meat.

Nearly all interviewees agreed that both the NPS and state wildlife agencies did a good job of communicating with the press and getting information out to the public but that communications within and more importantly between agencies could be improved to increase clarity and trust. All interviewees agreed that while the National Environmental Policy Act (NEPA) process was successful in creating an actionable plan, it alone was not an efficient method for meaningful interagency communication, nor did it encourage informal conflict resolution due in part to the rigid process and large working groups. Due to the controversial nature and strong attachment by agency staff, the most productive and collaborative discussion which led to constructive compromise occurred where trust and understanding of opposing views and interests could be developed between key decision makers. It was even more successful when relationships had been established prior to the conflict. The use of public volunteers in the preferred alternative at each park was a compromise in positions but a success in interests for both the parks and state wildlife agencies involved.

Both state wildlife agencies and the parks emphasized that elk are a public trust resource and that they are managing these iconic and highly desirable wildlife species for the good of the American public and also as part of the larger context of habitat sustainability for the elk and all species that share these ecosystems. States emphasized managing these resources for state constituents, where they acknowledged that hunters are their key public, whereas the NPS managed for both local and national constituents. States managed and advocated from a position consistent with the values identified in the North American Model of Wildlife Management. The guidance for wildlife management in parks was broadly defined without specific requirements as in state wildlife

management agencies. This is likely a function of an NPS policy which emphasizes letting nature regulate ecosystems and is unconstrained by past elk management practices given comparatively little contemporary elk population management has occurred in parks. Additionally, until recently, there has been little overall national direction on wildlife management within the NPS except in very broad terms (NPS 2006, NPS 2014). Finally, decision making within the NPS is more flexible than that which occurs at the state level likely due to the influence of State Wildlife Commissions, State Legislatures, and user groups which are more influential at the state level and often have less impact on wildlife issues at the federal level.

Both parks selected volunteers as a principle means of elk management; however, the differences in the external socio-political environment and surrounding human population demographic at each park resulted in meaningfully different implementation of this technique. The rural nature of North Dakota verses the more urbanized setting of the Front Range of Colorado meant that local publics had significantly different concerns and expectations about elk management in each park. Hunting is a predominant part of the culture in North Dakota whereas in Colorado there is a greater range of ideas regarding what constitutes appropriate elk management methods. Additionally, elk at RMNP are highly valued as watchable wildlife. Elk contribute large social and economic benefits to the local economy and the opportunity to experience elk by driving the park roads is one reason visitors come to the park. At TRNP, while visiting publics often know elk inhabit the park, they are rarely observed by simply driving the scenic road.

It was important to both state wildlife agencies that members of the public be included in removal activities; initially both states strongly urged the NPS to use some form of traditional hunting. When it became clear in both situations that a hunting solution would require congressional action, which in the case of TRNP was proposed by the state, and that NPS leadership at the highest levels would not support that action, discussion moved towards other options involving the public. This discussion led to the use of volunteers. It was important to the NPS to distinguish elk removal by volunteers from hunting from both legal and logistical perspectives. Some of the attributes of each program were designed for this purpose. Specifically, at both parks wildlife population and habitat management as well as biodiversity goals were emphasized and recreational experience of the volunteer was restrained or curtailed. Volunteers were informed the primary purpose of their participation was to safely and efficiently remove elk. At no time were volunteers allowed to make decisions about which animals to take nor were volunteers allowed to pose for photographs with downed elk. Service personnel were in control of the logistics and specifics of how, when, where, and which elk were removed, dressed and prepared for donation. While most volunteers were experienced hunters, there were no state issued hunting licenses or tags associated with these management actions, nor were any federal licenses or permits required. Volunteers received no compensation for their services and likewise did not pay for the opportunity. Emphasis was placed on completing a job efficiently and taking pride in assisting the parks with a resource issue. While each in itself is not definitive, these details in combination were critical in defining differences between hunting and volunteer culling.

Donation of the meat was important to everyone; however, states were more interested in volunteers having the opportunity to retain meat. While it may have been consistent with NPS policy to leave a portion or all of removed animals in the field for scavengers, this would not have been consistent with the expectations of the public or state wildlife agencies for responsible use of wildlife resources. The desire not to leave salvageable meat in the field was recognized and supported by all interviewees regardless of agency.

Just as it was important to distinguish between hunting and the use of volunteers, it was also important to nearly all interviewees that there be distinguishing features between volunteers and agency culling. It was particularly important to state agency personnel that volunteers be allowed to not only assist with the operation in general but specifically allowed to use firearms and kill animals. For NPS personnel it was less important whether agency personnel or volunteers did the killing and more imperative that safety be maintained and overall management goals achieved with minimal disruption to park operations. It was, however, important to each park that if volunteers were to do the shooting that they have the desired skills or qualifications outlined by each park. At TRNP these skills were primarily related to proficiency with firearms and ability to complete extremely physically challenging work. At RMNP the qualifications focused on a strong conservation ethic and desire to assist in resource management in addition to shooting and meat processing skills.

Despite strong reservations initially, personnel at both parks found that the elk management volunteers they recruited, trained and worked alongside were tremendously valuable assets to the programs. While each park recruited volunteers differently, both found that their strongest advocates and most vocal supporters were the volunteers themselves. They added legitimacy to the programs by providing positive feedback to the press and other venues about the professionalism of both operations and they decreased the cost of the overall process, particularly at TRNP, by providing valuable labor. One NPS person even commented that volunteers became "park ambassadors" and several commented on the positive aspects of "citizen wildlife managers". At RMNP many of the elk volunteers have remained engaged in volunteering at the park on projects other than the elk cull. Volunteers were viewed as valuable resources and significant time and energy were considered assets well spent on selecting, training, developing and managing volunteers. State wildlife agency personnel echoed these sentiments that volunteers provided overwhelmingly favorable feedback of the programs and that the programs provided a positive alternative to traditional hunting.

Economics of Elk Removal

The largest cost incurred at both parks to administer elk removal programs using volunteers was personnel time. We included the time associated with designing the removal program, public relations, interagency (between NPS and state wildlife agencies) discussion and negotiation on how to implement the programs, field operations including culling, meat processing, elk marking with GPS collars (TRNP only), and volunteer selection, training, and supervision. We did not include time associated with compliance planning, vegetation surveys, fencing (RMNP only), or research activities. Yearly elk population survey costs are included separately from the cost per elk. At RMNP during the 3 years of removal an average of $70,000/yr was spent on personnel time. At TRNP during the months prior to removal during project planning (2010) and the 2 years when

volunteers were used (2010-2011) $378,000/yr was spent on personnel time. During the first year when only NPS employees were used (2012) $184,000 was spent on personnel time.

The type of equipment and supplies used including, rifles, non-lead ammunition, backpacks, range finders, knives, game bags, sleds, vehicles, and personal protective equipment were similar at both parks. At RMNP $15,500 was spent on equipment and supplies and at TRNP $53,000 was spent to initiate the program not including $177,000 for GPS collars for Judas animals. Supply costs were minimal at RMNP after the first year (~$2,000-4,500/year), but at TRNP were significant due in large part to 4-wd vehicle rentals and fuel costs to transport staff and volunteers to remote locations of the park (~ $40,000/yr with volunteers and $10,000/yr with staff only) and rental of 1-2 refrigerated container trucks to store meat (~$10,000/yr October-January). The cost of elk surveys using ground counts and helicopter surveys at RMNP was ~$22,000/yr and the cost of fixed wing surveys at TRNP was ~ $3500/yr.

At TRNP the logistics of getting meat out of the backcountry were more difficult than at RMNP. During the first two years, most meat (~ 60%) was removed from the backcountry by volunteers and NPS employees; however, carcasses which could not be safely retrieved on foot were recovered by contract horse packers. The cost of carcass recovery using contractors averaged nearly $300 per animal retrieved. Meat recovery using contract packers cost an average of $53,000/yr during the first 2 years of the program when volunteers were used and packers cost $12,000 the first year of NPS-only removal. A greater percentage of elk (~60% vs ~40%) were removed using humans than horses when volunteers were engaged in the operation.

At RMNP meat was held at a contracted meat processing facility prior to donation. The cost of meat processing and distribution is not included in RMNP costs because it was covered by CDOW. It cost the state of Colorado approximately $1,100 per year to contract with a local meat processor to skin, quarter and distribute the meat from culled elk. At RMNP approximately 11,000 lbs of quartered carcasses were donated to the public through the CDOW and at TRNP more than 150,000 lbs of meat were donated to volunteers, Native American tribes, and state food banks. All donations to private individuals were completed through the state wildlife agency partners.

The cost per elk removed for the entire program as described above was ~$4,700/elk at RMNP and ~$1,450/elk removed using volunteers at TRNP. All elk culled at RMNP were removed using volunteers (n = 52) whereas only elk removed during the first two years incorporated volunteers at TRNP (n = 868). During the first year of elk maintenance (2012) at TRNP, 69 elk were removed using NPS personnel and the cost was ~$3,000/elk. This did not include amortized start-up costs. Volunteers decreased the cost of elk removal at TRNP by approximately half due to the efficiencies of scale and lower meat packing costs. There was no maintenance removal period required at RMNP due to decreased elk population size on the park winter range. Due in part to lack of need to remove elk, efficiencies of scale were not realized at RMNP.

At RMNP fencing was the largest expense of the program and will likely have the greatest effect on the outcome of re-vegetation and short-term recovery of aspen and willow communities. Fencing costs were not included in the cost per elk. Despite fences, willow communities sustained such

significant damage that re-planting will be required in many areas for restoration. Using independent contractors to fence ~230 acres with 7 foot high woven wire fencing over a period of 5 years cost $1.2 million. All fences have a 16 inch gap at the bottom to allow for ingress and egress of smaller wildlife species. Long-term fencing maintenance costs are not available at this time.

Volunteer hours spent in parks are commonly valued at ~$20/hr. Estimated value of volunteer time during the elk culling operations at RMNP was $40,000 and at TRNP was $240,000. At RMNP these volunteers have been retained and continue to assist with elk ground count surveys, vegetation monitoring and elk exclosure monitoring.

Discussion

Ungulate management in the NPS has been evolving since the inception of the Service nearly 100 years ago (Sellars 1997, Singer et al. 1998, Wright 1999, NPS 2014). While the Leopold Report (1963) is often cited as the document that directed the NPS towards decades of natural regulation as the primary means of managing ungulates (Singer et al. 1998, Olliff et al. 2013, Wright 1999), a careful reading of the Leopold Report reveals that the authors did not direct the NPS to rely solely on natural regulation. Indeed, the Leopold Report stated that "Direct removal by killing is the most economical and effective way of regulating ungulates in a park," and stated that recreational hunting "is an inappropriate use of national parks." The reconciliation of these two perspectives led the report authors to state that "the National Park Service may find it advantageous to employ or otherwise engage additional shooters from the general public". Nearly 45 years elapsed before the NPS implemented the use of public volunteers to regulate ungulate populations in parks.

With the exception of Grand Teton National Park, which has an elk reduction program that allows state licensed hunters deputized as rangers to remove elk in areas that were added to the park in 1950 (16 USC § 673c), elk have not been culled from NPS units for population management since the 1960s. At that time agency culling was viewed unfavorably by local and national constituents, state wildlife agencies and the NPS itself (Packard 1947, Olliff et al. 2013, Wright 1998). A period of natural regulation was adopted nearly Service-wide for approximately the next quarter century (1968-1995), followed by re-evaluation of this policy to prevent irreparable harm to park resources (NPS 2014). In many situations throughout the NPS, elk and other large ungulates interact with larger scale drivers and stressors such as land use change and invasive species to disturb their habitat and that of other species that share the same ecological communities. In only a few cases is wildlife translocation an option to mitigate these effects and the likelihood of these situations increasing in either desirability or feasibility is diminishing. Likewise, although consistent with NPS policy and often scientifically defensible (Estes et al. 2011), the potential for restoring large predators to the landscape of most parks is socially and politically difficult. Presently, viable management options are constrained for both state and federal wildlife management agencies, the desire to maintain naturally functioning large landscapes is high and there is strong public sentiment to provide opportunity for citizen science and public input to wildlife management (Wright 1998). Using volunteers as members of a combined agency personnel and public team may meet many of these objectives.

The local social environment has a significant impact on how parks may utilize volunteers. Local attitudes may influence agency decisions on the intensity and rate of culling. Visitation will have a great impact on when and how animals can be removed safely and with minimal disruption to park operations and visitor satisfaction. Park staff attitudes and perception of the social and inter-agency environments also play a role in implementation of this method. In spite of differences in their state constituencies and staffs, both RMNP and TRNP had successful programs from both the NPS and state wildlife agency perspective. The population goals were met in both parks within 3 years. At TRNP, this was due exclusively to efficient field protocols, highly orchestrated use of volunteers, and support of park employees from all divisions. At RMNP, elk removal using volunteers was one

piece of a larger more complex management plan; large fencing projects, high elk harvest adjacent to the park, large movements of elk out of the park and removal associated with research objectives all contributed to the overall goal of a reduced park elk population.

Management Implications

Rocky Mountain and Theodore Roosevelt National Parks demonstrated that with appropriate supervision and training, volunteers can safely and successfully remove large numbers of ungulates from the landscape and can do so in a cost effective manner when compared to using solely agency personnel. The experience gained through these two parks is potentially applicable to other overabundant ungulate situations within the National Park System.

White-tailed deer are deemed overabundant in several eastern and Midwestern NPS units. For white-tailed deer population management, trained volunteers may be a feasible, safe and efficient alternative, though consideration of local issues will be warranted.

Despite the NPS and state wildlife agencies having similar broad wildlife management goals of fostering healthy free-ranging wildlife populations, too often areas of disagreement on the approach to management have remained challenging problems to resolve. The situation improves when state and federal wildlife managers focus on common interests rather than opposing positions to find a path forward. Wildlife is a shared public trust resource and both state and federal agencies have been entrusted to make management decisions. By seeking common ground while respecting inherent differences in agency cultures and laws, we may find unique solutions to recurring problems that can meet the most important objectives of NPS and state wildlife agency policies, and interested publics. Removing elk using volunteers is one example of a novel solution which required compromise by all agencies involved and met the most important needs and objectives of each. We suggest this may be one effective solution to consider, after careful analysis of interested publics, in other NPS units facing similar ungulate abundance issues.

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Appendix A: Interview Information and Questions

Project Objective:

To understand and describe the intent and the reality of elk management using volunteers at Theodore Roosevelt and Rocky Mountain National Parks. We are interested in both planning and implementation processes.

Rationale:

We anticipate this information may be used by other parks analyzing the option to engage volunteers in ungulate management projects and will be useful when communicating to outside entities about how the NPS uses volunteers in elk management and engages state agencies. Finally, we believe this will increase transparency and provide context for NPS management actions to the broader public and wildlife management profession.

Your background:

1. How did you end up in the field of park or wildlife management?
2. Describe your experience with elk management prior to this one.
3. How did you become involved in the RMNP or TRNP elk management issue?

Planning process:

4. What was the primary reason to undergo elk management at RMNP or TRNP?
5. How were you involved in the planning process?
6. How did laws/regulations/policies influence the discussions during planning?
7. What made volunteers a critical component of this plan?
8. What changes would you make to the planning process?

Implementation process:

9. How were you involved in the implementing the plan?
10. How well do you think implementation went?
11. How did these actions affect visitor experience in your park or state?
12. What were the most valuable aspects of using volunteers?
13. What were the most difficult aspects of using volunteers?
14. What changes would you make to implementation of the plan?

Outcomes and lessons learned:

15. How well were objectives met?

16. What do you think the outcome would have been had a different alternative been chosen?
17. Do you think this plan will affect other national parks? If so, how?
18. What words of wisdom do you have for other state or NPS managers faced with similar decisions and interactions?

The Department of the Interior protects and manages the nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

NPS 999/131224, January 2016

National Park Service
U.S. Department of the Interior

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From: Barnum, Jeremy
To: Gopaul Noojibail
Subject: DRAFT Mountain Goat Briefing Statement
Date: Tuesday, January 21, 2020 12:02:47 PM

Hey,

We got off to a slow start today with the network issues and SLT. Waiting for a couple of folks to chime in here but wanted to get a draft in front you ASAP to make sure it's headed in the general direction. I have it limited to one page right now but will extend it if necessary. Please see below.

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DRAFT DRAFT DRAFT
Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton National Park and threaten the small and isolated native bighorn sheep population and other animal and plant resources in the Teton Range.
- The NPS is beginning to implement the Mountain Goat Management Plan (finalized Sep 2019) to immediately remove or significantly reduce mountain goats in the park. The park has determined that aerially based lethal removal is the most efficient and effective method to rapidly remove mountain goats in order to protect the native bighorn sheep population. The first aerial lethal removal operation has been delayed until late January/early February due to weather.
- The Wyoming Game and Fish Department (WGFD) sent a letter to the park on Jan. 15, expressing concerns about aerial lethal removal of mountain goats and asking that skilled volunteers be used instead.

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development. Currently, the population is estimated at about 100 individuals.
- Mountain goats were first seen in the Teton Range in 1979 but only in recent years have biologists documented a rapidly increasing breeding population. Without intervention, non-native mountain goats could transmit pathogens and compete with, or displace Teton bighorn sheep on very limited winter ranges and optimal summer habitat. There is high interest among state and federal biologists and local constituents in conserving the Teton bighorn

sheep herd.

- The Mountain Goat Management Plan outlines strategies to significantly reduce or remove mountain goats from the Tetons, using NPS staff and skilled contractors, primarily through lethal means. In response to requests from WGFD, the use of skilled volunteers was included as a management option. Live capture and translocation could be used as well, but a suitable location has not yet been identified.

- Mountain goats are widely dispersed in high-elevation backcountry areas of the park that are difficult to access making their removal logistically challenging with skilled volunteers or through live capture and relocation.

Current Status:

- While there has been overall public support for the removal of mountain goats to protect the bighorn sheep population, the park has received some negative comments from members of the public after the first aerial lethal removal operation was announced.

- The acting superintendent has spoken with the WGFD director to discuss our commitment to pursuing the possibility of using skilled volunteers and to explain the strict legal provisions of culling operations in national parks i.e., the supervised use of skilled volunteers could not generate revenue, would not incorporate the concept of fair chase (animal must be identified by a resource manager) and that there can be no reward to the culler (no trophy).

Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 21, 2020

Re_ Current Draft of Briefing Statement on Moun...(2).pdf

From:	Gopaul Noojibail
To:	Barnum, Jeremy
Subject:	Re: Current Draft of Briefing Statement on Mountain Goat Management
Date:	Tuesday, January 21, 2020 5:17:02 PM
Attachments:	ATT00001.htm GRTE UPDATED Briefing Statement, Mountain Goat Management Plan.January 21, 2020.docx

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Can we add something about th density -invasive curve and how science is driving our management considerations?
Also that I have spoken w delegations. ?

Gopaul Noojibail
Superintendent (acting)
Grand Teton National Park
John D. Rockefeller Memorial Parkway
(307) 739-3411

On Jan 21, 2020, at 6:51 PM, Barnum, Jeremy <jeremy_barnum@nps.gov> wrote:

Gopaul,

The current draft of the mountain goat briefing statement is attached. Everyone in the park has signed off -- I reached out to Ray to see if he has any feedback.

Let me know when you're comfortable with me sending this to David, Shawn, and Chris (I assume with a cc for region?).

Thanks,

Jeremy K. Barnum
Chief of Staff (Acting)
Grand Teton National Park
Desk: (307) 739-3428
Mobile: (202) 617-7973

DRAFT
Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton National Park and threaten the small and isolated native bighorn sheep population and other

animal and plant resources in the Teton Range.

- The NPS is implementing the Mountain Goat Management Plan (decision Sep 2019) to immediately remove or significantly reduce mountain goats in the park. The park has determined that aerially-based lethal removal is the most efficient and effective method to rapidly remove mountain goats in order to protect the native bighorn sheep population. The first aerial lethal removal operation has been delayed until early February due to weather.

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Background:

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- The Mountain Goat Management Plan outlines strategies to remove or significantly reduce mountain goats from the park, using NPS staff and skilled contractors, primarily through lethal means. In response to requests from WGFD, the use of skilled volunteers was included as a management option. Live capture and translocation by interested recipients could be used as well, but specific suitable locations where mountain goats are native have not yet been identified.

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Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 21, 2020

GRTE UPDATED Briefing Statement, Mountain Goa_4.pdf

Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

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Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 21, 2020

Re_ Current Draft of Briefing Statement on Moun...(1).pdf

From:	Barnum, Jeremy
To:	Gopaul Noojibail
Subject:	Re: Current Draft of Briefing Statement on Mountain Goat Management
Date:	Tuesday, January 21, 2020 8:27:13 PM
Attachments:	GRTE UPDATED Briefing Statement, Mountain Goat Management Plan.January 21, 2020.docx

How about this? (changes tracked/highlighted in the below and attached)

Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
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Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 21, 2020

Jeremy K. Barnum
Chief of Staff (Acting)
Grand Teton National Park
Desk: (307) 739-3428
Mobile: (202) 617-7973

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Grand Teton National Park
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DRAFT

Briefing Statement January 2020

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Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 21, 2020

GRTE UPDATED Briefing Statement, Mountain Goa_5.pdf

Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

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Last updated: January 21, 2020

Re_ Current Draft of Briefing Statement on Moun....pdf

From:	Gopaul Noojibail
To:	Barnum, Jeremy
Subject:	Re: Current Draft of Briefing Statement on Mountain Goat Management
Date:	Wednesday, January 22, 2020 10:29:13 AM
Attachments:	ATT00001.htm GRTE UPDATED Briefing Statement, Mountain Goat Management Plan.January 21, 2020.docx

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Not state folks - us delegation.

Gopaul Noojibail
Superintendent (acting)
Grand Teton National Park
John D. Rockefeller Memorial Parkway
(307) 739-3411

On Jan 21, 2020, at 10:26 PM, Barnum, Jeremy <jeremy_barnum@nps.gov> wrote:

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Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
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Last updated: January 21, 2020

Jeremy K. Barnum
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>> DRAFT
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>>
>> **Bureau:** National Park Service
>> **Issue:** Mountain Goat Management Plan
>> **Members:** Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
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Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 21, 2020

GRTE UPDATED Briefing Statement, Mountain Goa_6.pdf

Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

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Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 21, 2020

White Paper on Skilled Volunteers.pdf

From:	Barnum, Jeremy K
To:	Smith, Douglas (Gus) F; Germann, Denise M; Gustine, David D; Dewey, Sarah R
Subject:	White Paper on Skilled Volunteers
Date:	Wednesday, February 12, 2020 8:19:23 AM
Attachments:	NPS VIP Culling (2).docx

Sharing what we received from NRSS/WASO on the issue if you don't have it already and in advance for potential conversations on the matter with Wy G&F this week.

Jeremy

NPS VIP Culling (2)_1_1.pdf

February, 2018

On the Use of Public Volunteers to Cull Wildlife in the National Park System

The purpose of this document is to assist and support National Park Service (NPS, Service) managers who are considering implementation of wildlife culling operations where public volunteers will participate in associated stewardship actions. This guide is not meant to prescribe the activities for any specific NPS unit. Instead, it describes the breadth and depth of issues which should be considered and decided upon at the local level. There is no one public volunteer culling model that will fit perfectly for every park. There are, however, lessons learned which may be helpful to other units in the system. Consulting with other NPS managers who have been through this process is strongly encouraged as is partnering with state wildlife management agencies and neighboring land management agencies whenever practical and appropriate.

Backgrou nd

The NPS is unique among federal land management agencies in its mandate regarding hunting. Unlike the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS), NPS lands are closed to hunting, except where it is specifically authorized by Congress. There are approximately 76 (of 417) NPS units open to hunting, most of which are named as National Preserves, National Seashores, or National Recreation Areas. None of the units named as National Parks have public hunting (though one, Grand Teton National Park, has a statutorily mandated elk reduction program that temporarily deputizes state licensed hunters for elk reduction but is not technically considered a “hunting park”).

This long standing legal requirement of prohibiting public hunting in national park units has resulted in the NPS managing overabundant wildlife in a variety of alternate methods through the last century. It is important to acknowledge that in the first 30 years after establishment of the Service in 1916, many wildlife populations, particularly ungulates, were at historically low levels as a result of market hunting, habitat degradation, and unregulated sport hunting in the late 19th and early 20th centuries. As populations of ungulates began to recover in the mid-20th century, the NPS and other land managers recognized that increasing populations were having significant negative impacts on vegetation and other natural and cultural resources. The NPS began to cull mule deer and elk using NPS and state wildlife agency personnel in some western parks as early as the 1930s, and this practice continued through the 1960s. In 1963, an NPS advisory board chaired by A. Starker Leopold released a report that stated that “A national park should represent a vignette of primitive America” (Leopold p.3) and “Above all other policies, the maintenance of naturalness should prevail.” (Leopold p.6) These ideas were both formally and informally adopted by the NPS and governed the management of ungulates for almost 30 years. The concepts of allowing nature to run its course and minimizing active population management

were applied throughout the Service. But the Leopold Report also contained the following recommendation: “as removal programs (for wildlife) increase in size and scope, the NPS may find it advantageous to employ or otherwise engage additional shooters from the general public” (Leopold p.14). This advice was not followed during the 40 year period from the mid-1960s to the mid-2000s.

By the late 1980s and early 1990s, NPS managers at many parks were aware of significant issues with increasing populations of white-tailed deer in the East and elk in the West. There were significant documented impacts on ecosystems and park resources, risks to public health and safety, and frustration among neighboring land owners. Managers grew concerned about continuing this “hands off” policy of wildlife population management. In the mid-1990s NPS again initiated culling by agency personnel or hired contractors, such as the USDA/Animal and Plant Health Inspection Service/Wildlife Services.

Other alternatives for reducing effects of ungulates and protecting park resources were often considered during planning efforts and in a few specific cases were implemented. These options include translocation, predator restoration, wildlife fertility control, and fencing to protect vulnerable plant species. At the present time, only fencing is used on a regular basis. Until recently, there has been little

direct public involvement in wildlife management actions on NPS lands other than through the public planning process. However, in the past 10-15 years, there has been increasing public and state wildlife agency support for direct public involvement in removal of excess wildlife from NPS lands. In 2009, Rocky Mountain National Park, and in 2010, Theodore Roosevelt National Park, began using public volunteers to assist with elk culling and in 2016 the NPS compared and contrasted these two programs. For additional information on these projects see Natural Resource Report NPS/NRSS/BRD -2016/1119.

The Service found that implementing public volunteer programs to cull wildlife generated significant support from some constituencies such as state wildlife agencies, rural communities, and sportsmen; however, these types of programs also generated negative responses from anti-hunting groups and some traditional NPS visitor support groups. The fiscal costs are highly variable and depend on the specific logistics of each program. At Theodore Roosevelt NP, the cost per animal was less when the public was engaged than when agency culling was used alone. At Rocky Mountain NP, all animals were taken by volunteers and therefore it was difficult to compare costs of agency only versus volunteer culling. The recommendations to other parks considering this option include: thorough public outreach efforts, site specific analysis of biological and social issues, and a cost benefit analysis by NPS leadership including the political gains and liabilities.

The use of public volunteers is primarily relevant to NPS units where public hunting is not authorized by law. In NPS units open to hunting, it is generally less expensive, more efficient, and more politically acceptable to use public hunting seasons following consult with the relevant State, and with or without state coordination on implementation, in order to achieve the necessary removals to achieve resource management goals. However, there may be certain situations where the NPS might choose to use public volunteers in a hunting-authorized unit; this could include situations where there is no public hunting season available for a specific species, or recreational harvest is not effective due to lack of interest, timing, coordination or other regulatory or social reasons.

Law
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There are multiple federal statutes, regulations and NPS policies relevant to the use of public volunteers in National Parks as a means of reducing wildlife populations.

54 U.S.C. § 100101(a), also known as the "NPS Organic Act," gives the Service the authority to "promote and regulate the use of the National Park System by means and measures that conform to the fundamental purpose" of its units, "which purpose is to conserve the . . . wild life and provide for the enjoyment . . . in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations". This is a clear mandate from Congress that the NPS has authority over wildlife on its lands, except as otherwise specifically provided by federal statute. This is an important distinction between NPS and other federal land management agencies, such as the Bureau of Land Management (BLM) and the US Forest Service (USFS) where authorities for wildlife management are not as clear and where certain actions, such as management of many wildlife populations have been relinquished to state wildlife agencies.

In addition, 54 U.S.C. § 100752 allows NPS to "provide for the destruction of such animals and plant life as may be detrimental to the use of any System unit". This law allows the NPS to develop and implement programs to destroy native or non-native animals that it deems to be detrimental to the fundamental needs of a specific unit. Historically this has been used to support reduction or elimination of non-native and invasive species, but it also supports reduction of native species, and in particular ungulates like mule deer, white-tailed deer, and elk in situations where they have exceeded ecological or social carrying capacity and have negative impacts on park resources.

Finally, 54 U.S.C. § 102301 gives the NPS the authority to "recruit, train and accept the

services of individuals without compensation as volunteer for or in aid of other activities in and related to System units and related areas". Historically these volunteers have focused on interpretive and visitor functions; however, their use in other activities, such as wildlife management, has also occurred. These three federal statutes form the legal basis and authority for the NPS to manage wildlife and also to engage the public as volunteers to assist in situations where populations need to be reduced for ecological, social, and other reasons.

Regulation
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NPS regulations at 36 CFR § 1.4 contain definitions of wildlife and hunting that are relevant to wildlife management, and 36 CFR § 2.2 contains NPS's prohibition on hunting except in units with specific statutory authorization for it, as well as additional provisions applicable to hunting. However, these regulations apply primarily to visitor activities, and not to NPS management actions. Wildlife reduction falls under the regulatory exemption for administrative activities carried out by NPS, 36 C.F.R. § 1.2(c), and as a result it is not directly subject to these regulations. Finally, 43 CFR §24.4 addresses resource management on Department of the Interior lands. Paragraph (5) requires consultation with states on a number of actions including "the planned and orderly removal of surplus or harmful populations of fish and wildlife". However, there is an exception that says consultation is NOT required "when the Secretary determines that such compliance would prevent him [or her] from carrying out statutory duties". Consultation can be accomplished through formal National Environmental Policy Act (NEPA) planning processes or through informal meetings and dialog.

Policie
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There are no specific policies in Management Policies 2006 that directly deal with the use of public volunteers for wildlife culling. However, Section 7.6.1 discusses a variety of activities in the Volunteers in Park (VIP) program yet only mentions wildlife culling in the context of interpretation and education. Section 4.4.2.1 *NPS Actions that Remove Native Plants and Animals* is applicable as it supports removal of native animals only when it can be done without unacceptable risks to native resources, natural processes, or other park resources. This section also specifically allows for the removal of native wildlife "by NPS personnel or their authorized agents." It further states that when such removals occur the "destroyed animals may be left in natural areas" and allowed to decompose unless there are circumstances where carcasses should be removed for human health, safety and other reasons. This policy further states that live animals or carcasses may be removed from parks according to applicable laws, regulations or agreements, including preferences for Native Americans.

Differences Between Culling and
Hunting

As discussed above, the destruction of detrimental animals as part of NPS wildlife management activities, or culling, is governed by different authorities than public hunting of wildlife by park

visitors. It is important for NPS managers to be aware of the distinctions between the two and to consistently manage and refer to them as distinct activities.

NPS received some guidance on these distinctions in a 2011 decision by the U.S. District Court for the District of Colorado that rejected a challenge to the elk management plan at Rocky Mountain National Park (*WildEarth Guardians v. National Park Service*, 804 F. Supp. 2d 1150 [2011]). The plaintiffs in that case argued in part that NPS's use of public volunteers to cull elk violated the legal prohibition of hunting in the park. In rejecting that argument and upholding the NPS plan, the court discussed several key ways that the elk culling differed from hunting, namely: the **purpose** for destroying the animal, the **manner** in which the destruction occurred, and the **disposition** of the animals that were killed. First, culling is done exclusively for conservation and stewardship purposes, while hunting is done primarily for recreation or

procuring food. Second, culling is conducted under controlled circumstances under the supervision of NPS personnel, while hunting is performed at the hunter's discretion (subject to applicable licensing and laws) and with elements of "fair chase". Finally, hunting allows and most often requires the person taking the animal to keep the meat, while culling does not. The court's opinion finished with the following: "put simply, culling serves the public purpose, while hunting serves both public and private purposes".

The U.S. Court of Appeals for the Tenth Circuit later affirmed this decision in an opinion that for most purposes is more legally authoritative, 703 F.3d 1178 (10th Cir. 2013), but because it did not discuss the distinction between culling and hunting in the same detail, the District Court opinion remains a useful source of guidance on that point. It is not entirely binding on NPS actions—culling programs do not necessarily need to mimic the Rocky Mountain National Park elk plan in every detail—but culling that follows the principles discussed can be seen as more likely to withstand any potential legal challenges.

Maintaining these distinctions between recreational hunting and culling is thus a critical aspect of instituting a public volunteer reduction program. There are other aspects of these distinctions that NPS managers should be aware of.

Licensing: All recreational hunting in the U.S. requires a state issued hunting license (the only exceptions may be damage control on private lands for certain species [some of which are not classified by states as wildlife]). There is no requirement that public volunteers on NPS lands not open to hunting have a state issued hunting license. In fact, culling appears less like hunting if no license requirement is mandated by the NPS. Some states that are partnering in these programs may desire the NPS to make this a requirement, but it may not be prudent as it can blur the distinction between hunting and culling. In addition, most states require a hunter education certificate (issued by states after taking a course) before a hunter can purchase a

license. Parks might consider this option as one of the multiple requirements for prospective public volunteers. It gives the NPS knowledge that the person applying has had some firearms and safety training. However, requiring a hunter education certificate does not mandate requiring a state hunting license for culling purposes. The most important aspect of this concept is that volunteers have the skills necessary to perform the culling operations. These skills can be evaluated in a variety of ways (see *Volunteer Selection* section below).

State Regulations: Most hunting occurs in the U.S. under a series of laws and regulations that dictate criteria that hunters must follow. These include limits on the species and number of animals that may be killed, seasons for specific species, types of weapons and ammunition allowed, safety clothing, and fair- chase rules, among others. It may be important for the NPS **not** to fully follow the state regulations for the species that the NPS is culling. For example, NPS may not follow state limits on the number of animals that can legally be removed, whether as a daily or season restrictions, if they interfere with NPS's management goals or decrease the efficiency of culling efforts. In many situations there are opportunities for one shooter to kill multiple animals and achieve culling goals more quickly and efficiently than if the NPS were to follow applicable state rules. State wildlife agency rules or laws that regulate safe hunting activities, such as blaze orange, shooting from or across public roads, and carrying loaded weapons in vehicles should be considered by parks as potential safety measures that could be adopted for culling programs. The NPS must be considerate of stewardship goals and objectives when designing their project implementation plan.

Fair-Chase: Fair-chase is a philosophy that governs and limits the use of certain tools that would make hunting easier and give hunters a distinct advantage. Laws and regulations regarding fair-chase are not consistent between states. Techniques that fall outside of fair-chase may include the use of aircraft, vehicles and lights to kill wildlife, hunting over bait, hunting in situations where wildlife is artificially constrained by fences, and the use of electronic devices to attract targeted wildlife to certain areas. However, many of these tools and techniques might be valuable to aid the NPS and public volunteers in the efficient reduction of targeted species. Under a culling program the principles of fair-chase are not

applicable, and may run counter to the overall goals of the program. Two techniques that parks have used are the use of bait to attract animals to areas that are safe and convenient for culling, and the use of radio- collars to identify animal locations for more efficient culling operations.

Table 1: *Park attributes*

ROMO THRO WICA HAVO EVER Species Elk Elk Elk Non-native

Non-native Mouflon sheep

reptiles National vs state volunteer selection ***Use of Volunteers in Parks to Cull Wildlife***

There are five park units that currently or in the recent past have used public volunteers to remove wildlife (see Table 1). At Theodore Roosevelt National Park (THRO), Rocky Mountain National Park (ROMO), and Wind Cave National Park (WICA) three unique programs were used to kill elk. All three used members of the public to shoot elk and assist with dressing, cleaning, and storing the meat. Each program was different in the method of volunteer selection, the

amount of training and supervision, the efficiency of removal, and the cost; however, they all worked closely with their respective state wildlife agencies to distribute the meat derived from these programs. At Hawaii Volcanoes National Park (HAVO) members of the public are brought into units where non-native Mouflon sheep removal is occurring. Two volunteers are given the opportunity to shoot and a third person can retain the meat from as many animals as the team can remove per day. A state hunting license is required at HAVO but not at the other parks where volunteers are removing wildlife. At Everglades National Park (EVER) members of the public can sign up as agents of the park to live capture Burmese Pythons and other non-native reptiles

5 National National State National but mostly local

National but mostly local State hunting education course required?
No No Yes Yes No
Hunting license required?
No No No Yes No
Meat distribution through the state? Yes Partially Yes No N/A Shooting test required? Yes Yes Yes No N/A VIP agreement required? Yes Yes Yes Yes Yes Criminal background check required? Yes Yes Yes No Yes Volunteer period At least one season
5 days 5 days 1 day At least 5 days in a 6 month period Volunteer uses NPS firearm? Yes No No No N/A NPS or public supplied non-lead ammunition? NPS Public Public NPS and public N/A Meat distribution Public lottery
Volunteers (through ND), tribes, charities (directly)
Volunteers (directly), charities and tribes (through SD)
Volunteer meat recovery person directly
N/A
Carcass storage Commercial meat locker
Refrigerated truck on site
Refrigerated truck on site
N/A N/A

and amphibians. Injurious wildlife is then placed in bags and collection bins within the park and park staff is responsible for analysis and disposition of the animals. A current Volunteer in Parks agreement is required in each of these parks to complete this work. Costs and staff time vary widely between parks and depend on how intensively the program is managed. To date, all programs where firearms are used have at least one NPS employee with the volunteers at all times.

Where might public volunteer culling be effective?

Engaging public volunteers to remove wildlife may be a useful tool in other NPS units. At the present time there are four parks that have ongoing formal NEPA planning processes that include an alternative to use public volunteers; these include Grand Canyon National Park (bison), Olympic National Park (mountain goats), and Great Sand Dunes National Park and Preserve (elk), Chesapeake and Ohio Canal, and Harpers Ferry National Historical Park (white-tailed deer). There are common biological, socio- political, and logistical attributes of parks that lend themselves to engaging public volunteers.

Biological environment

There should be documented adequate demonstration of the problem and impacts caused by overabundant wildlife species. Documenting effects of overabundant wildlife can take years of data collection and analysis and may require specific biological expertise. Some NPS units may not have this expertise on site and partnering with outside researchers (e.g., U.S. Geological Survey staff), the NPS Inventory and Monitoring Division, universities and contractors, is encouraged in order to assist with this biological evaluation. Or, as in EVER, the purpose of the volunteer program itself may be to acquire individual animals to aid in understanding the problem and developing an appropriate management strategy. These analyses may include habitat and vegetation assessments, loss of or damage to key indicator species, or potential impacts on species of special concern (e.g., threatened and endangered species and their habitats, local species of concern), or detection or removal probabilities of the target species itself. There should also be sufficient ecological and demographic information about the target population to make informed choices on how many animals, and of which sex and age class to remove to meet and sustain population management objectives. Finally, it is important to understand animal accessibility. Knowing wildlife distribution and abundance, what migration or movement patterns are, and when and to what extent they use NPS lands and their impacts, are critical.

Social environment

The use of public volunteers has many internal and external social issues that park managers should consider. This is a relatively new tool and NPS employees may not be comfortable or familiar with members of the public using firearms in parks or with the public being involved in activities that have traditionally been performed by NPS employees or other professionals. Despite these concerns, several National Parks, with internal as well as external support, have successfully implemented public volunteer culling programs.

Local, regional, and national stakeholders often have strong feelings about the benefits and detriments of using public volunteers to cull wildlife. Nationally, there are many pro-hunting and wildlife conservation organizations that support the use of public volunteers as a tool for wildlife

management in the National Park System. Many of these groups have robust political support and have used their influence in various public processes to seek greater use of public volunteers. Conversely, there are a number of animal welfare, environmental conservation, and national park support groups that have expressed strong opposition to the use of public volunteers for culling activities as it closely resembles recreational hunting. As discussed above, NPS was sued by one such group over the Rocky Mountain National Park elk management plan, in part over the use of public volunteers. Parks considering the use of public volunteers should reach out to both sides of this issue and have an active program for stakeholder

engagement at the national and local levels; this is both to inform and prevent either side from diverting planning processes and decisions with political intervention.

At the local level, support for or opposition to public volunteers depends on a variety of factors; key among them are local government, local land-owners, and other constituents. All of these stakeholders should be well informed of decision making processes and be invited into the conversation. Urban and ex- urban constituents tend to focus concerns on safety issues, effects on visitation and local economies, as well as placing more emphasis on animal welfare issues. In contrast, rural constituents often have concerns about impacts to private property and agricultural interests. Additionally, they tend to focus on impacts on local hunting opportunities. This was the situation at Theodore Roosevelt NP in North Dakota where there was great public interest in elk culling opportunities that was compounded by few opportunities for elk hunting in the state. If there are ample hunting opportunities locally there may be less demand from hunters and state wildlife agencies for using public volunteers. This was the scenario at Rocky Mountain NP where there is a great deal of public hunting available for elk in the state and thus less interest to participate in controlled culling activities. Likely the best source of information regarding local hunting communities will be state wildlife agencies. They work with and know this constituency well and can provide key information to parks regarding the potential interest from the state hunting community. In addition to local hunting interests parks should be aware of the concerns of local landowners, be they private, county, state or federal and ensure that their opinions are taken into consideration prior to making decisions.

In addition to understanding national and local publics, it is important to understand the how culling operations are perceived in light of societal ethics. For example, considering whether females have dependent young at the proposed culling time (e.g., April-August for most ungulates) is important. If it is necessary to remove females during this time consideration should be given to removing their offspring as well. Similarly, due to animal welfare concerns significant effort should be made to minimize wounding losses. Finally, culling of male animals, such as buck deer or bull elk is often necessary to achieve population goals and to mitigate habitat issues. If so, then a good solution is to wait until antler drop, if possible. This reduces the

perception that trained volunteers are targeting trophy males and thus reducing desirable public hunting opportunities outside of NPS boundaries.

Logistical constraints

Funding

On-the-ground logistics and personnel experience often dictate the nature of the volunteer program. Recent volunteer programs have been resource intensive, both in terms of costs and employee time. Specific costs for implementation of two elk culling programs has been analyzed and can be found in Natural Resource Report NPS/NRSS/BRD -2016/1119. Future programs may be more efficient and less expensive depending on the intensity of the culling effort and the level of oversight individual parks find necessary. Pursuing funding for implementation at the same time as finishing planning compliance will make removal operations more expedient.

Timing

The timing of trained volunteer actions depends on many variables. Removal periods should be prioritized based on efficiency of removals and optimizing safety for staff and volunteers while minimizing impacts to other park visitors. One important factor is deciding whether or not removal efforts will be in conjunction with hunting seasons outside the park. In some situations efforts are coincident so as not to create a refuge situation either inside or outside of the park and therefore maximize efficiency. Alternately, it may be necessary to cull animals during the summer months when volunteers can most effectively access backcountry habitat but most public hunting is not available. Similarly, it is important

to consider if it is possible to differentiate males and females easily at the time of year considered for removal operations. Generally, it is desirable to focus on removal of females if the goal is population reduction or stabilization. Additionally, it is often perceived more favorably by stakeholders if females rather than males are removed, particularly in situations where there is public hunting focused on male harvest adjacent to NPS properties. However, there are instances where it may be more important to remove males, such as when there is disease that carried or shed more often by one sex.

Time of day

Most wildlife species are more active in early morning and late evening and thus these can be productive times to focus culling efforts. These are also periods that may not correspond to peak visitor use. Depending on local conditions, night culling over bait and with lights or night vision optics can be very effective and this time may avoid visitor conflicts. However, night removal raises safety issues and needs to be carefully coordinated. By using stands or specific shooting areas and not allowing volunteers to randomly move around after dark, safety concerns can be mitigated. During all of the public volunteer removal operations conducted to date volunteers operated during daylight hours.

Locatio
n

Depending on the species and park terrain, culling locations will vary significantly. Site selection criteria should include areas where animals are readily available and at a density that allows for adequate efficiency. When the target species is white-tailed deer, an animal with a relatively small home range, culling can usually be done in any portion of the home range and should be targeted to areas that are distant from high visitor use. Use of tree stands and bait can significantly increase culling success. Conversely, elk and other large ungulates are often migratory and may not stay in a park year-round; thus culling should occur when animals are available and concentrated in the park. Given the direction already noted to avoid times with dependent young, this may constrain available locations.

Culling is more efficient if there is relatively easy access for trained volunteers to access the targeted species. Use of radio-telemetered sentinel animals (i.e., Judas animal) can increase efficiency when locating groups of herd based animals. Requiring lengthy walking to access culling areas and remove carcasses can reduce efficiency, though may be necessary (wilderness areas). Theodore Roosevelt NP packed quartered animals out of the backcountry in backpacks and via pack horses whereas Wind Cave NP used ATV/UTVs to remove entire intact carcasses. Rocky Mountain NP gutted the animals at the kill site and sledded carcasses short distances to the road by hand. Hawaii Volcanoes NP had moderate hikes to access Mouflon carcasses that were brought out in backpacks. In addition to the level of difficulty in accessing animals and carcasses, wilderness regulations add to the complexity and analysis. Without access to motorized vehicles, efficiency will be decreased in most situations.

Parks should also consider impacts to other visitors. Closing areas to public use during culling operations may be warranted. Theodore Roosevelt NP and Wind Cave NP closed the backcountry to visitor use during the culling operations whereas Rocky Mountain NP did not close areas but conducted low intensity operations at times when visitors were not typically present. At Hawaii Volcanoes NP, in units where culling occurs limited visitation is allowed but only during non-culling times. Potential visitor closures are often controversial and should be considered during the planning processes.

Voluntee
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Selectio
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Selection of public volunteers who have the skills and attitude necessary for a successful culling operation is critical. First, the pool of potential volunteers from which to select must be identified. The NPS is a national organization and as such, one potential pool is all interested U.S. citizens. Depending on method

and intensity of advertising, this may create a large pool of potential applicants and may be difficult to manage. Theodore Roosevelt and Rocky Mountain NPs advertised nationally, through websites and other media outlets and Theodore Roosevelt NP in particular drew intense national interest, which added to the overall cost of managing the program. In contrast, Wind Cave NP, in cooperation with South Dakota Game Fish and Parks (SDGFP), used only the SDGFP hunter data base as the potential applicant pool. Because South Dakota restricts elk hunting to only residents this restricted the pool to in-state hunters. This decreased the cost of volunteer selection. Early on at Hawaii Volcanoes NP, there was national advertisement and interest in of the program. However, after the initial 8 years, the park took a break to implement a planning process and since then has focused on local advertisement and meeting the interest of local communities although the program remains open to any U.S. citizen who meets the requirements. Similarly, Everglades NP has focused on local residents with knowledge of constrictor snakes and maximizing effective participation over time. They used word-of-mouth and the park website to build a network of volunteers who are willing to return multiple times but the program remains open to anyone who meets the requirements.

In some situations, an efficient system may be to use a state data base of hunters who have an expressed interest in the targeted species; however, this then requires that a person be a state licensed hunter in order to be considered and may not be perceived as a fair process by non-hunters or people from other states. Conversely, an NPS derived selection process that extends beyond state boundaries may be more defensible given that the National Park System is managed for all members of the public. There are no known legal constraints regarding local, state, or national selection processes, nor have there been any specific challenges to date in existing NPS public volunteer culling programs.

Beyond geographic location of potential volunteers, a method of evaluating and selecting volunteers based on their skill sets and attitudes towards culling, hunting, and conservation is a critical need. This may include a shooting proficiency test, self-certifications of fitness and/or skill in meat processing, oral/written interviews by NPS staff to determine experience of the volunteer, demonstration of these skills prior to allowing a volunteer to participate, and/or on the job training. A method of confirming a volunteer’s eligibility to possess a firearm under the Gun Control Act (1968) and Lautenberg Amendment (2001) is required (e.g., criminal background

check, Lautenberg certification). Different methods have been used at each park. The most intense screening process was at Rocky Mountain NP, which required an extensive written application, criminal background check, in-person interviews including their personal views of conservation and hunting, and a shooting test. Additionally, they required two days of classroom training and one day in the field as a dry run. Conversely, at Theodore Roosevelt NP there were no in-person interviews. Self-certification of physical capabilities and an on-site shooting test were the only requirements in addition to a half-day classroom orientation. Despite these self-certifications there was significant drop-out due to physical limitations and failure of the shooting test (~20-25%). More intensive screening processes and training add to program costs. The amount of training and screening needed may be a function of the complexity of the program and the level of controversy that culling has generated among stakeholders, as well as site-specific safety issues. This will need to be decided on a park by park basis.

Supervisio
n

Clearly, evaluation and encouragement of skills related to knowledge and use of firearms, killing and dressing large animals, and working in a team environment takes tact and experience on the part of NPS employees functioning as volunteer supervisors. Employees who are supervising volunteers using firearms to cull wildlife must have high skill levels in these fields themselves which often means they may have traditional hunting backgrounds or have participated in wildlife culling in the past. Additionally, they must have high levels of maturity, excellent interpersonal skills, and enthusiasm for leading people by demonstrating a good example. Supervisors must also know what to do in the event of a medical emergency; therefore basic or backcountry first aid and CPR are important skills. Finally, an

excellent working relationship between direct supervisors and other NPS staff, particularly law enforcement and interpretation, may facilitate positive outcomes if there is a human-related emergency in the backcountry. Given the diverse nature of these operations, NPS staff with both biological and visitor safety backgrounds are needed to coordinate a successful program.

Supervision of volunteers can be intensive or extensive. For example, at Rocky Mountain NP, the Incident Command System was employed during public volunteer operations; whereas at Everglades NP volunteers work unsupervised by NPS employees. To date, when firearms are used at least one NPS employee has directly supervised 1-4 volunteers. Depending on the difficulty of finding animals, the terrain that is covered, fitness of the volunteers, difficulty in removing meat safely from the field, and circumstances surrounding visitor safety, different parks may require more or less supervision. In most parks volunteers also help with data collection and dressing and processing meat. It is important for supervisors to emphasize the importance of accurate data gathering and hygienic meat processing techniques as many

volunteers may not have experience in these areas.

Those public volunteers who have a positive relationship with their VIP supervisors and view their culling experience as beneficial often become long term advocates and ambassadors of the Park and the NPS (Natural Resource Report NPS/NRSS/BRD -2016/1119). Volunteers with the time and means to engage in these types of programs are most often members of the local or at least regional communities. They often return to the park and engage in other volunteer opportunities such as vegetation monitoring, data collection, or wildlife surveys. To date, the overwhelming majority of volunteer experiences have been positive and they are eager to share their experiences with others in their communities. They bring legitimacy to the culling programs by telling their communities the reality and dispelling the myths of the culling programs. They often speak with the press or on social media sites and can tell their stories publically, again validating the NPS programs and their wildlife management and stewardship goals. The positive nature of their stories is most often directly related to their experience in the culling program. When the supervisor made them feel useful, engaged, and a valued member of the team, their stories often reflect this. The unique nature of the experience also adds to the affirmative feedback that volunteers give. Therefore, selecting the appropriate supervisors is of utmost importance.

Method of take

There are a variety of weapon types available to cull wildlife. This decision should be based on a number of factors including: the targeted species, safety, noise issues, and efficacy of the weapon. Tolerance for wounding issues and local social norms surrounding firearms will also influence this decision.

Only non-lead ammunition should be used in culling operations per Director's Memo dated March 4, 2009. This policy is to protect human and wildlife health, reduce impacts on the environment and minimize spent lead in soil entering the food chain via scavenging. While non-lead ammunition may be more difficult to find and more expensive to purchase than traditional lead bullets, it is an NPS requirement in culling activities. Volunteers may not be familiar with using non-lead ammunition. Parks can offer to provide non-lead ammunition to volunteers to use in personally owned weapons, or they can provide standardized weapon and ammunition combinations to volunteers. Alternately, parks can require volunteers to bring their own weapon and ammunition of appropriate caliber. Requiring the use of NPS firearms provides a level of consistency but may be a burden to participants as most volunteers already own and are most comfortable with their own weapons. There is a significant cost to parks if they decide to purchase and maintain weapons for culling and this may not be necessary to ensure program success (see Table 1).

February, 2018

Rifles

High powered, scoped, center fire rifles are generally the most efficient tool for culling large ungulates. They have a greater range, greater killing power, and widespread availability that make them a logical choice. The high accuracy and killing power make them more efficient and effective than other weapons and there is less wounding loss. However, bullets can travel long distances, more than a mile in certain situations, therefore it is important to know the backdrop and final disposition of the bullet if the target is missed. In urbanized or high use areas this can create safety concerns. Restricting the use of rifles to certain areas or requiring volunteers to be located in stands or against safe backdrops can dramatically reduce risk, but it also limits efficiency. Rim fire rifles (.22 caliber) are generally not a viable tool for culling ungulates. They do not have enough power to efficiently kill larger animals (white-tailed deer and larger) and can still travel distances up to one mile; therefore, their use is not recommended. Appropriate caliber and grain of ammunition is species and environment dependent. State wildlife agencies often have requirements for caliber and grain for a given species that may be adopted by parks. Other sources of information on ammunition size are available from NPS law enforcement personnel and from other parks that have engaged in culling, either internally or with the public. Semi-automatic high powered rifles are legal to use in many states; however the number of bullets allowed in magazines varies by state. For safety reasons, it is recommended that parks consider adopting rules consistent with state law that restrict the total number of bullets available in both the magazine and chamber.

Shotguns

Shotguns shooting either a slug or large shot (00 buck shot for example) are highly effective in killing larger animals, in particular white-tailed deer, but are limited by their effective range. In general, shotguns are effective up to 75-100 yards. In certain situations like forested environments they can be an effective tool for culling. They may be particularly useful in situations where houses, campgrounds, or other human activity occur in the general area. Shotgun slugs will generally not travel more than 300 yards. There are numerous situations where shotguns have been used by hunters to effectively reduce white-tailed deer in urban and ex-urban locations. They are most effective when used in conjunction with tree-stands and over baited areas. In nearly all situations 12 gauge shotguns should be used, as smaller gauges such as 16, 20 or 28 are not typically effective for large mammals. Non-lead shotgun slugs and buck shot is generally widely available.

Muzzleloading rifles

These weapons have similar capabilities to 12 gauge shotguns but are much less efficient as they shoot only one round and then have to be reloaded. Given this reduced efficiency they should not be considered for culling.

Archer
y

Archery equipment has evolved in recent years and has become more efficient with the use of compound bows. Archery is effective up to 50-70 yards and arrows tend to travel less than 150 yards in most situations. Given these parameters archery could be utilized by public volunteers in specific situations where animals are found in close proximity to developed areas. Generally, archery is most efficient when combined with the use of blinds or tree stands and efficiency is maximized for culling if done over bait. Another potential benefit of archery is the lack of sound impacts as compared to firearms. One significant drawback of archery is that wounding loss is increased and wounded animals may leave the park and not be recovered. Additionally, archery is less efficient than other methods given the time it takes to shoot multiple arrows and may not be appropriate for large body size animals such as bison. The park must considered volunteer skills and animal welfare aspects in this type of weapon use.

Carcass disposition

While retention of meat is not required by law or NPS policy, it is consistently an important ethical consideration when deciding on the disposition of the culled animal. State wildlife agencies, the general public, and NPS staff generally agree that using the meat for human consumption is a positive outcome from a culling operation (Natural Resource Report NPS/NRSS/BRD -2016/1119). NPS's authority to "provide for the destruction" of detrimental animals also allows for disposition of the remains of these animals, whether it is via meat donation to state wildlife agencies, charities, tribes, or individuals or to dispose of the carcasses in other ways such as decomposition on the landscape or left for scavenging or through the use of landfill, incineration, or alkaline digestion. All options are available for disposition of carcasses. Parks should be aware of the cultural and political sensitivities of methods which appear to waste edible meat or otherwise discard what may be culturally valuable portions of the carcass. While there is no legal prohibition against allowing a volunteer to keep an animal the VIP culls or its meat, it is important to note that this weakens one of the distinctions between volunteer culling and hunting (as discussed above).

In general, there is strong support for salvaging valuable portions of the carcass and making

them available to tribes, charitable organizations, or volunteers. State wildlife agencies often want the volunteers to be able to retain the meat. To date, parks have generally worked closely with states for meat distribution. At Rocky Mountain NP, the carcass became the property of the state once it was loaded into a truck for transport to a meat locker. At Theodore Roosevelt NP some meat was donated to the state and this was in turn donated to the volunteers and the remainder of the meat was directly donated to tribes or food banks. At Wind Cave NP, most meat was donated to the state which distributed to charities and the rest going directly to volunteers. At Hawaii Volcanoes NP, meat is salvaged by a third volunteer who is not part of the culling operation and the meat is directly retained by this person. At Everglades NP, once the animal was dispatched by NPS personnel, a full necropsy is performed, data collected, and the carcass returned to the environment to decompose. Disease and toxins must be considered when planning for disposition.

Non-edible portions of animals such as antlers, horns, and hides are often desired by public volunteers and by tribal interests for ceremonial reasons. The retention and donation of these products can be controversial and also make for a less efficient cull. Removing these from the field takes additional time and effort and can reduce time spent in actual culling. However, in some situations, parks may find it advantageous to allow some of these parts to be removed and donated to specific groups or to volunteers depending on local situations. Generally, photographing volunteers in “trophy poses” is discouraged.

Public health

Once a decision has been made to donate all or portions of carcasses it is important to maintain good meat handling protocols to prevent contamination or spoilage. The U.S. Public Health Service (USPHS) has Public Health Consultants stationed within parks throughout the nation as well as a Public Health Veterinarian stationed within the Biological Resources Division of the Natural Resource Stewardship and Science directorate. These staffs are available to consult on regular basis with parks wanting to maintain meat in a condition that is appropriate for human consumption. [Note: at the time of writing Captain George Larsen (george_larsen@nps.gov) stationed at Yellowstone National Park is the USPHS employee with the most expertise in this area.]

It is important to cool an animal as quickly as possible after death to maintain meat quality. This usually means removing the organs of the animal in the field. Depending on ambient temperatures, field removal options, data collection and disease testing needs, and storage options this may mean deboning the animal in the field and putting meat in game bags or it may mean removing the entire animal from the field either whole or in quarters. Processing should be efficient and focused on keeping meat from being

contaminated with fecal or gut material as well as dirt and other debris. Knives should be kept clean. Meat can also be cleaned at a later time during processing but should always be handled with care and attention. Exact requirements for holding temperatures and best management practices for meat donation should be discussed prior to project implementation with USPHS staff. Finally, there are a wide range of options for donation of meat. The entire carcass, carcass without entrails, skinned and quartered carcass, deboned meat, or fully processed and packaged meat can be donated. Logistics and meat holding times will depend on the resources available (i.e., refrigeration trucks, meat lockers, meat processors, individuals doing their own meat processing, state cooperation, etc.). Meat derived from wildlife resources is not U.S. Department of Agriculture inspected and there is no guarantee of meat quality. Recipients should be made aware of this. There is, however, an expectation that products donated by the NPS are known to not be harmful or detrimental to human health.

Disease testing

There is only one disease, chronic wasting disease (CWD), which is routinely tested for in culled and donated wildlife species. Most cervids (deer, elk, and moose) are tested prior to donation. This testing is performed to better understand and surveil for the disease in wildlife. It is not a food safety test. However, if an animal is tested for CWD it should not be donated until after the test results are available. While CWD is not known to affect humans, positive carcasses should not be donated for human consumption. A meat donation waiver that accompanies meat from CWD endemic areas is strongly recommended and should list the precautions that have been taken to prevent CWD from entering the human food chain. Other diseases may be tested for depending on local conditions at the park. Any animal that appears sick at the time of culling or has abnormal lesions observed at butchering should be removed from the human food chain. Disease testing is never for food safety and does not guarantee a safe product. If an animal is found to have lesions either during butchering or during a field necropsy it should be submitted for further evaluation through a veterinary pathology laboratory or through the NPS Biological Resources Division-Wildlife Health Branch. (Contacts can be found at the Wildlife Health Branch website)

Summary

Engaging public volunteers in the removal of wildlife from NPS units is a relatively new and novel management and stewardship approach that a few parks have utilized. It is important to emphasize that this is not a one-size-fits all management option. There are no exact requirements for this kind of a volunteer program, but it is necessary to follow Volunteer Program Guidelines and Requirements. The best outcomes generally occur when a clear biological need has been demonstrated, when there is good communication and cooperation with state wildlife agencies, when animals can be reasonably accessed by members of the public in a safe and efficient manner, when visitor use is minimally impacted and when NPS staff understands the process and logistics of killing and processing animals. Park staffs need to balance safety concerns for volunteers, staff, visitors, and the public with animal welfare issues

and overall program efficiency. These factors need not be weighted equally and the optimal balance will depend on site-specific circumstances. For example, direct supervision of public volunteers can increase safety and decrease animal welfare concerns but may not be warranted if highly skilled volunteers are chosen. Alternately, in Eastern parks in ex-urban landscapes, it may be necessary to have higher levels of NPS supervision.

In summary, the following concepts should be considered when implementing an NPS public volunteer culling program:

- Public perception of NPS professionalism and credibility is important for program success. Public volunteers culling wildlife is a new management tool that is likely to be highly scrutinized from a

wide variety of viewpoints. It will be important to be transparent about our programs and thoughtful about implementation practices.
- Animal welfare is important to the public and to the NPS and should be considered in all aspects of project planning and operations.
- It is important to use an adaptive management approach to a program that engages public volunteers. This is a management action that should be evaluated like any other responsible and well informed management action at the park. This means gathering biological, technical, and economic data on the program as it occurs and periodically evaluating whether or not it is meeting NPS management goals.
- Consistent communication is critical. The park should have a well-developed communication plan shared with park staff, the local community and other engaged partners such as the State.
- Ultimately, the most successful programs will optimize safety and efficacy.

Submitted by:

The Biological Resources Division (BRD), Natural Resource Stewardship and Science Directorate (NRSS)

Jenny Powers DVM, PhD, Wildlife Veterinarian, BRD, NRSS,

Rick Kahn, Wildlife Biologist, BRD,
NRSS,

Elaine F. Leslie, Chief, BRD,
NRSS.

For additional information please
see:

Leopold, A.S., S.A. Cain, C.M. Cottam, I.N. Gaberielson, and T.L. Kimball. 1963. Wildlife Management in the National Parks. Administrative Policies for Natural Areas of the National Park System. U.S. Department of the Interior, National Park Service.

Nie, M., C. Barns, J. Haber, J. Joly, K. Pitt, and S. Zellmer, “Fish and Wildlife Management on Federal Lands: Debunking State Supremacy,” Environmental Law, 47, no. 4 (2017)

Powers, J., R. Kahn, W. Whitworth, J. Mack, and B. Bobowski. 2016. Elk management in the National Park Service: Two case studies in the use of public volunteers. Natural Resource Report NPS/NRSS/BRD/NRR—2016/1119. National Park Service, Fort Collins, Colorado.

[EXTERNAL] RE_ WY Game & Fish news_ Game and Fi....pdf

From:	Yorgason, Nathan B -FS
To:	Dewey, Sarah R
Subject:	[EXTERNAL] RE: WY Game & Fish news: Game and Fish Director calls for stop to aerial gunning of mountain goats
Date:	Friday, February 21, 2020 2:51:08 PM
Attachments:	image006.png image007.png image008.png image009.png

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Skilled volunteers. I like that.

Nate Yorgason
Wildlife Program Manager - Great Basin GACC IR Liaison

Forest Service
Caribou - Targhee National Forest - Curlew National Grassland

p: 208-557-5785
c: 435-590-1107
f: 208-557-5826
nathan.yorgason@usda.gov

1405 Hollipark Drive
Idaho Falls, ID 83401
www.fs.fed.us

Caring for the land and serving people

From: Dewey, Sarah R [mailto:Sarah_Dewey@nps.gov]
Sent: Friday, February 21, 2020 2:03 PM
To: Yorgason, Nathan B -FS <nathan.yorgason@usda.gov>
Subject: Re: WY Game & Fish news: Game and Fish Director calls for stop to aerial gunning of mountain goats

They agree that mountain goats need to be removed from the Tetons, but do like the method. They would like hunters (or skilled volunteers) to be able to take them.

Sarah Dewey
Wildlife Biologist
Grand Teton National Park
PO Box 170
Moose, WY 83012
(307) 739-3488

From: Yorgason, Nathan B -FS <nathan.yorgason@usda.gov>
Sent: Friday, February 21, 2020 1:59 PM
To: Dewey, Sarah R <Sarah_Dewey@nps.gov>

Subject: [EXTERNAL] FW: WY Game & Fish news: Game and Fish Director calls for stop to aerial gunning of mountain goats

???? I thought they were on the same page

Nate Yorgason
Wildlife Program Manager - Great Basin GACC IR Liaison

Forest Service
Caribou - Targhee National Forest - Curlew National Grassland

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Caring for the land and serving people

From: Mickelsen, Robbert -FS
Sent: Friday, February 21, 2020 12:50 PM
To: Yorgason, Nathan B -FS <nathan.yorgason@usda.gov>; Bolling, Mel F -FS <mel.bolling@usda.gov>; Pence, Jay -FS <jay.pence@usda.gov>
Subject: FW: WY Game & Fish news: Game and Fish Director calls for stop to aerial gunning of mountain goats

FYI

Robbert Mickelsen
Ecosystem Branch Chief

Forest Service
Caribou-Targhee NF and Curlew NG

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c: 208-206-3637
robbert.mickelsen@usda.gov

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Caring for the land and serving people

From: Wyoming Game & Fish Department [mailto:WGFD_noreply@public.govdelivery.com]
Sent: Friday, February 21, 2020 12:43 PM
To: Mickelsen, Robbert -FS <robbert.mickelsen@usda.gov>
Subject: WY Game & Fish news: Game and Fish Director calls for stop to aerial gunning of mountain goats

NEWS Cheyenne Headquarters

Feb. 21, 2020

Game and Fish Director calls for stop to aerial gunning of mountain goats

CHEYENNE — Today, Wyoming Game and Fish Director Brian Nesvik again called for the stop to the mountain goat culling through aerial gunning in Grand Teton National Park. The park intends to begin mountain goat removal today and through the weekend.

In a phone call to Gopaul Noojibail, acting Grand Teton Park superintendent, Game and Fish made a third request to **stop aerial gunning to remove mountain goats from the Targhee herd.>**

Conserving Wildlife – Serving People

The Wyoming Game and Fish Department manages and conserves more than 800 species of fish and wildlife across Wyoming. For nearly 120 years, we've carried out our mission to conserve wildlife and serve people. Through these efforts, the Wyoming Game and Fish Department ensures the public continues to enjoy Wyoming's vast fish and wildlife resource through hunting, fishing, trapping, wildlife watching and other forms of outdoor recreation. Hunters, anglers and wildlife watchers contribute over a billion dollars to Wyoming's economy each year.

For press in need of a high-resolution photo, please send your requests to sara.dirienzo@wyo.gov.

You are receiving this email because you signed up for Wyoming Game and Fish Department's updates.

Wyoming Game and Fish Department
Cheyenne Headquarters
5400 Bishop Blvd.
Cheyenne, WY 82006

Sara M. DiRienzo
Public Information Officer
(307) 777-4540
sara.dirienzo@wyo.gov

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This email was sent to rmickelsen@fs.fed.us using GovDelivery Communications Cloud on behalf of: Wyoming Game & Fish Department · 5400 Bishop Blvd · Cheyenne, WY 82006 · (307) 777-4600

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Fw_ GRTE_ Updated Briefing Statement on Mountai....pdf

From:	Reynolds, Michael T
To:	Picavet, Alexandra M; Powell, Christine J; Benge, Shawn T; DeSordi, Janice M
Cc:	Noojibail, Gopaul E; Carpenter, Jennifer C; Hammond, Katharine (Kate) H; Kenney, Patrick
Subject:	Fw: GRTE: Updated Briefing Statement on Mountain Goat Management
Date:	Friday, February 21, 2020 3:34:31 PM
Attachments:	GRTE UPDATED Briefing Statement, Mountain Goat Management Plan.January 21, 2020.docx ATT00001.htm

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DC Folks:
Anticipating interest back there with ASFWP Hallway next week as GRTE goats has been rough with Wyoming folks this week. This is our last brief on the Goat control at GRTE.
I'll be on cell from Zion with Kate and Jennifer. Pat Kenny is here in Denver.

Michael Reynolds
Regional Director
National Park Service
Interior Regions 6,7,8
Lakewood, CO
303.969.2503 desk
209 347 6500 cell

From: Reynolds, Michael T <Michael_Reynolds@nps.gov>
Sent: Wednesday, January 22, 2020 5:27 PM
To: Hammond, Katharine (Kate) H <Kate_Hammond@nps.gov>; Carpenter, Jennifer C <Jennifer_Carpenter@nps.gov>
Subject: Fwd: GRTE: Updated Briefing Statement on Mountain Goat Management

Sent from my iPhone

Begin forwarded message:

> **From:** "Barnum, Jeremy" <jeremy_barnum@nps.gov>
> **Date:** January 22, 2020 at 5:21:18 PM MST
> **To:** Christine Powell <chris_powell@nps.gov>
> **Cc:** Shawn Benge <shawn_benge@nps.gov>, Ray Sauvajot <ray_sauvajot@nps.gov>, Michael Reynolds <michael_reynolds@nps.gov>, Gopaul Noojibail <gopaul_noojibail@nps.gov>, Victoria Mates <victoria_mates@nps.gov>
> **Subject: GRTE: Updated Briefing Statement on Mountain Goat Management**
>
> Hi Chris,

As conversations continue about Grand Teton's ongoing mountain goat management efforts, please see our latest briefing statement on the issue for your reference.

Let me know if you have any questions or need additional information.

Best,

Jeremy K. Barnum
Chief of Staff (Acting)
Grand Teton National Park
Desk: (307) 739-3428
Mobile: (202) 617-7973

GRTE UPDATED Briefing Statement, Mountain Goa_7.pdf

Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton National Park and threaten the small and isolated native bighorn sheep population and other animal and plant resources in the Teton Range.
- The NPS is implementing the Mountain Goat Management Plan (decision Sep 2019) to immediately remove or significantly reduce mountain goats in the park. The park has determined that aerially-based lethal removal is the most efficient and effective method to rapidly remove mountain goats in order to protect the native bighorn sheep population. The first aerial lethal removal operation has been delayed until early February due to weather.
- The Wyoming Game and Fish Department (WGFD) sent a letter to the park on Jan. 15, expressing concerns about aerial lethal removal of mountain goats and asking that skilled volunteers be used instead.

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development. Currently, the population is estimated at about 100 individuals.
- Mountain goats were introduced south of the park over four decades ago and were first seen in the Teton Range in 1979. In recent years, biologists have documented a rapidly increasing breeding population. Without intervention, non-native mountain goats could transmit pathogens and compete with, or displace Teton bighorn sheep on very limited winter ranges and optimal summer habitat. There is high interest among state and federal biologists and local constituents in conserving the Teton bighorn sheep herd.
- The Mountain Goat Management Plan outlines strategies to remove or significantly reduce mountain goats from the park, using NPS staff and skilled contractors, primarily through lethal means. In response to requests from WGFD, the use of skilled volunteers was included as a management option. Live capture and translocation by interested recipients could be used as well, but specific suitable locations where mountain goats are native have not yet been identified.
- Mountain goats are widely dispersed in high-elevation backcountry areas of the park that are difficult to access making their removal logistically challenging with skilled volunteers or through live capture and relocation.

Current Status:

- Park leadership have based current actions to remove non-native mountain goats on the best available science, including the density-impact invasive species curve. The curve indicates that management for invasive species is significantly more biologically and cost effective the earlier and more rapidly it is initiated.
- While there has been overall public support for the removal of mountain goats to protect the bighorn sheep population, the park has received some negative feedback after the first aerial lethal removal operation was announced.
- The acting superintendent has spoken with the WGFD director to discuss our commitment to pursuing the possibility of using skilled volunteers and to explain the strict legal provisions of culling operations in national parks such as the supervised use of skilled volunteers could not generate revenue, would not

incorporate the concept of fair chase (animal must be identified by a resource manager) and that there can be no reward to the culler (no trophy).

- The acting superintendent has also briefed staffers from the offices of Senators Barrasso and Enzi and Congresswoman Cheney on current mountain goat removal actions and potential actions in the future. The staffers asked questions during the conversation but did not suggest that the congressional members they represent have taken a position on the issue.

Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: January 21, 2020

FW_ Updated Briefing Paper.pdf

From:	Barnum, Jeremy K
To:	Smith, Douglas (Gus) F; Germann, Denise M; Finlay, Christopher M
Subject:	FW: Updated Briefing Paper
Date:	Sunday, February 23, 2020 9:32:58 AM
Attachments:	GRTE UPDATED Briefing Statement Mountain Goat Management Plan.February 21 2020.docx

Hi All,

Flagging this for you as well. Please let me know if you have any concerns.

Jeremy K. Barnum
Chief of Staff (Acting)
Grand Teton National Park
Desk: (307) 739-3428
Mobile: (202) 617-7973

From: Barnum, Jeremy K <Jeremy_Barnum@nps.gov>
Sent: Sunday, February 23, 2020 9:29 AM
To: Barnum, Jeremy K <Jeremy_Barnum@nps.gov>
Subject: Updated Briefing Paper

See attached.

Jeremy K. Barnum
Chief of Staff (Acting)
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Desk: (307) 739-3428
Mobile: (202) 617-7973

GRTE UPDATED Briefing Statement Mountain Goat.pdf

Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton National Park and threaten the small and isolated native bighorn sheep population and other animal and plant resources in the Teton Range.
- The NPS is implementing the Mountain Goat Management Plan (decision Sep 2019) to immediately remove or significantly reduce mountain goats in the park. The park ~~has~~ determined that aerially-based lethal removal is the most efficient and effective method to rapidly remove mountain goats in order to protect the native bighorn sheep population. After earlier weather delays the first aerial operation to lethally remove mountain goats ~~began~~ took place on February 21. The operation was extremely effective with 36 mountain goats euthanized in four hours. The operation was also very economically efficient, with a cost of roughly $270 per mountain goat.
- Operations were paused over the weekend after strong objections from the governor of Wyoming and the ~~The~~ Wyoming Game and Fish Department (WGFD) who have asked ~~sent a letter to the park on Jan. 15, expressing concerns about aerial lethal removal of mountain goats and asking~~ that skilled volunteers be used instead.
- Mountain goats are widely dispersed in high-elevation backcountry areas of the park that are difficult to access making their removal logistically challenging with skilled volunteers or through live capture and relocation.

Formatted: Font: (Default) Times

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that have called the Teton's home since the last ice age. The herd ~~that~~ lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development. Currently, the population is estimated at about 100 individuals.
- Mountain goats were introduced south of the park ~~over~~ more than 40 years~~four decades~~ ago and were first seen in the Teton Range in 1979. In recent years, biologists have documented a rapidly increasing breeding population. Without intervention, non-native mountain goats could transmit pathogens and compete with, or displace Teton bighorn sheep on very limited winter ranges and optimal summer habitat. There is ~~high~~ widespread support~~interest~~ among state and federal biologists and local constituents in conserving the Teton bighorn sheep herd.
- The Mountain Goat Management Plan outlines strategies to remove or significantly reduce mountain goats from the park, using NPS staff and skilled contractors, primarily through lethal means. In response to requests from WGFD, the use of skilled volunteers was included as a management option. Live capture and translocation by interested recipients could be used as well, but specific suitable locations where mountain goats are native have not yet been identified.
- ~~Mountain goats are widely dispersed in high-elevation backcountry areas of the park that are difficult to access making their removal logistically challenging with skilled volunteers or through live capture and relocation.~~

Current Status:

- Park leadership have based current actions to remove non-native mountain goats on the best available science, including the density-impact invasive species curve. The curve indicates that management for invasive species is significantly more biologically and cost effective the earlier and more rapidly it is initiated.
- ~~While there has been overall public support for the removal of mountain goats to protect the bighorn sheep population, the park has received negative feedback from the governor's office and WGFD.~~
- The acting superintendent has spoken with the WGFD director on three different occasions since early January to discuss the concerns of the director and the Game and Fish Commission that aerial lethal removal of ungulates is against Wyoming values. ~~his concerns~~ WGFD that the park could utilize hunters to remove mountain goats in the same way we jointly administer the park's elk reduction program with WGFD. The park is working to help stakeholders understand a key distinction: the elk reduction program was congressionally authorized in the park's enabling legislation.
- ~~and to express~~The park has expressed our commitment to pursuing the possibility of using skilled volunteers and to explain the strict legal provisions of culling operations in national parks such as the supervised use of skilled volunteers could not generate revenue, would not incorporate the concept of fair chase (animal must be identified by a resource manager) and that there can be no reward to the culler (no trophy).
- The development of a skilled volunteer program will take time and significant resources and would likely not be deployed until late fall when the park's heavy backcountry use by recreationists begins to subside for the season and before winter storms make access to mountain goat range difficult and dangerous on foot.
- The park has also briefed staffers from the offices of Senators Barrasso and Enzi and Congresswoman Cheney on current mountain goat removal actions and potential actions in the future. The staffers did not indicate that the congressional members they represent have taken a position on the issue.

Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: February 2~~1~~3, 2020

[EXTERNAL] .pdf

From:	Erin Noojibail
To:	Gopaul Noojibail
Subject:	[EXTERNAL]
Date:	Sunday, February 23, 2020 12:45:02 PM
Attachments:	GRTE UPDATED Briefing Statement Mountain Goat Management Plan.February 21 2020 GPN COMMENTS.docx

GRTE UPDATED Briefing Statement Mountain Goat_1.pdf

Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton National Park and threaten the small and isolated native bighorn sheep population ~~and other animal and plant resources~~ in the Teton Range. There is widespread support among state and federal biologists and local constituents in conserving this herd.
- The NPS is implementing the Mountain Goat Management Plan (decision Sep 2019) to immediately remove or significantly reduce mountain goats in the park. The park ~~has~~ determined that aerially-based lethal removal is the most efficient and effective method to rapidly remove mountain goats in order to ~~protect~~preserve the native bighorn sheep population. Due to ~~After earlier~~ weather delays, the first aerial operation ~~to lethally remove~~ mountain goats ~~began~~ took place on February 21. The operation was extremely effective with 36 mountain goats euthanized in four hours (36% of the estimated population) at a total cost of about XXX or ~~. The operation was also very economically efficient, with a cost of roughly~~ $270/animal ~~per mountain goat~~.
- Operations were paused over the weekend after strong objections from the governor of Wyoming and the ~~The~~ Wyoming Game and Fish Department (WGFD) who have asked ~~sent a letter to the park on Jan. 15, expressing concerns about aerial lethal removal of mountain goats and asking~~ that skilled volunteers be used instead.
- In response to requests from WGFD, the use of skilled volunteers was included as a management option in the plan. Live capture and translocation by interested recipients could be used as well, but specific suitable locations where mountain goats are native have not yet been identified.
- Mountain goats are widely dispersed in high-elevation backcountry areas of the park that are difficult to access making their removal logistically challenging with skilled volunteers or through live capture and relocation.
-

Commented [1]:
Does he still want this? You choose

Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that have endured in the Teton range ~~called the Teton's home~~ since the last ice age. The herd ~~that~~ lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development. Currently, the population is estimated at about 100 individuals.
- Mountain goats were introduced south of the park ~~over~~ more than 40 years~~four decades~~ ago and were first seen in the Teton Range in 1979. In recent years, monitoring results show that the ~~biologists have documented a rapidly increasing~~ breeding population has increased rapidly. Without intervention, non-native mountain goats could transmit pathogens to or ~~and compete with,~~ or displace Teton bighorn sheep on very limited winter ranges and optimal summer habitat. ~~There is high widespread support interest among state and federal biologists and local constituents in conserving the Teton bighorn sheep herd.~~
- The Mountain Goat Management Plan codifies ~~outlines~~ strategies to remove ~~or significantly reduce~~ mountain goats from the park, using NPS staff and skilled contractors, primarily through lethal means. ~~In response to requests from WGFD, the use of skilled volunteers was included as a management option.~~

~~Live capture and translocation by interested recipients could be used as well, but specific suitable locations where mountain goats are native have not yet been identified.~~

- ~~Mountain goats are widely dispersed in high-elevation backcountry areas of the park that are difficult to access making their removal logistically challenging with skilled volunteers or through live capture and relocation.~~

Current Status:

- Park leadership have based current actions to remove non-native mountain goats on the best available science, including the density-impact invasive species curve. The curve indicates that management for invasive species is significantly more biologically and cost effective the earlier and more rapidly it is initiated.
- ~~While there has been overall public support for the removal of mountain goats to protect the bighorn sheep population, the park has received negative feedback from the governor's office and WGFD.~~
- The acting superintendent has spoken with the WGFD director on three different occasions since early January to discuss the concerns of the director and the Game and Fish Commission that aerial lethal removal of ungulates is against Wyoming values. ~~his concerns~~ WGFD that the park could utilize hunters to remove mountain goats in the same way we jointly administer the park's elk reduction program with WGFD. The park is working to help stakeholders understand a key distinction: the elk reduction program was congressionally authorized in the park's enabling legislation.
- ~~and to express~~The park has expressed our commitment to pursuing the possibility of using skilled volunteers and to explain the strict legal provisions of culling operations in national parks such as the supervised use of skilled volunteers could not generate revenue, would not incorporate the concept of fair chase (animal must be identified by a resource manager) and that there can be no reward to the culler (no trophy).
- The development of a skilled volunteer program will take time and significant resources and would likely not be deployed until late fall when the park's heavy backcountry use by recreationists begins to subside for the season and before winter storms make access to mountain goat range difficult and dangerous on foot.
- The park has also briefed staffers from the offices of Senators Barrasso and Enzi and Congresswoman Cheney on current mountain goat removal actions and potential actions in the future. The staffers did not indicate that the congressional members they represent have taken a position on the issue.

Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: February 2~~1~~3, 2020

Re_ FW_ Updated Briefing Paper.pdf

From:	Smith, Douglas (Gus)
To:	Barnum, Jeremy K
Cc:	Germann, Denise M; Finlay, Christopher M
Subject:	Re: FW: Updated Briefing Paper
Date:	Monday, February 24, 2020 8:13:08 AM
Attachments:	GRTE UPDATED Briefing Statement Mountain Goat Management Plan.February 21 2020.docx

For what it's worth, I made a couple of suggestions.
G

On Sun, Feb 23, 2020 at 9:32 AM Barnum, Jeremy K <Jeremy_Barnum@nps.gov> wrote:

> Hi All,
>
> Flagging this for you as well. Please let me know if you have any concerns.
>
> Jeremy K. Barnum
>
> Chief of Staff (Acting)
>
> Grand Teton National Park
>
> Desk: (307) 739-3428
>
> Mobile: (202) 617-7973
>
> ---
>
> **From:** Barnum, Jeremy K <Jeremy_Barnum@nps.gov>
> **Sent:** Sunday, February 23, 2020 9:29 AM
> **To:** Barnum, Jeremy K <Jeremy_Barnum@nps.gov>
> **Subject:** Updated Briefing Paper
>
> See attached.
>
> Jeremy K. Barnum
>
> Chief of Staff (Acting)
>
> Grand Teton National Park
>
> Desk: (307) 739-3428
>
> Mobile: (202) 617-7973

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GRTE UPDATED Briefing Statement Mountain Goat_2.pdf

Briefing Statement January 2020

Bureau: National Park Service
Issue: Mountain Goat Management Plan
Members: Senator Barrasso (R-WY), Senator Enzi (R-WY), Congresswoman Cheney (R-WY)
Park: Grand Teton National Park and John D. Rockefeller, Jr. Memorial Parkway

Key Points:

- Non-native mountain goats are increasing in Grand Teton National Park and threaten the small and isolated native bighorn sheep population and other animal and plant resources in the Teton Range.
- The NPS is implementing the Mountain Goat Management Plan (decision Sep 2019) to immediately remove or significantly reduce mountain goats in the park. The park ~~has~~ determined that aerially-based lethal removal is the most efficient and effective method to rapidly remove mountain goats in order to protect the native bighorn sheep population. After earlier weather delays the first aerial operation to lethally remove mountain goats ~~began~~ took place on February 21. The operation was extremely effective with 36 mountain goats euthanized in four hours. The operation was also very economically efficient, with a cost of roughly $270 per mountain goat.
- Operations were paused over the weekend after strong objections from the governor of Wyoming and the ~~The~~ Wyoming Game and Fish Department (WGFD) who have asked ~~sent a letter to the park on Jan. 15, expressing concerns about aerial lethal removal of mountain goats and asking~~ that skilled volunteers be used instead.
- Mountain goats are widely dispersed in high-elevation backcountry areas of the park that are difficult to access making their removal logistically challenging with skilled volunteers or through live capture and relocation.
-

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Background:

- The Teton Range is home to a genetically isolated population of native bighorn sheep that have called the Teton's home since the last ice age. The herd ~~that~~ lives year-round at high elevations, cut off from their historical valley winter ranges by residential and recreational development. Currently, the population is estimated at about 100 individuals.
- Mountain goats were introduced in Idaho, south of the park ~~over~~ more than 40 years~~four decades~~ ago and were first seen in the Teton Range in 1979. In recent years, biologists have documented a rapidly increasing breeding population. Without intervention, non-native mountain goats could transmit pathogens and compete with, or displace Teton bighorn sheep on very limited winter ranges and optimal summer habitat. There is ~~high~~ widespread support~~interest~~ among state and federal biologists and local constituents in conserving the Teton bighorn sheep herd.
- The Mountain Goat Management Plan outlines strategies to remove or significantly reduce mountain goats from the park, using NPS staff and skilled contractors, primarily through lethal means. In response to requests from WGFD, the use of skilled volunteers was included as a management option. Live capture and translocation by interested recipients could be used as well, but specific suitable locations where mountain goats are native have not yet been identified.
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Contact Person: Gopaul Noojibail, Acting Superintendent, 307-739-3410
Last updated: February 2~~1~~3, 2020

Commented [SD(F1]: The definition of fair chase is that the animal is wild and free to move. Shooting goats in a pen would not be fair chase.