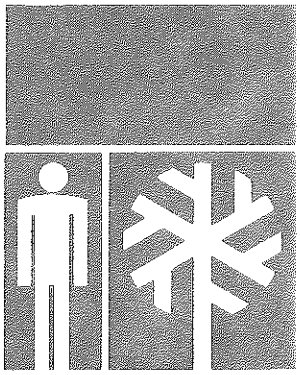
final environmental impact statement
grizzly bear management program

october 1982



YELLOWSTONE

NATIONAL PARK / IDAHO, MONTANA, WYOMING

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

FINAL ENVIRONMENTAL IMPACT STATEMENT
GRIZZLY BEAR MANAGEMENT PROGRAM

YELLOWSTONE NATIONAL PARK
IDAHO, MONTANA, WYOMING

Abstract

The National Park Service proposes to implement a modified grizzly bear management program in Yellowstone National Park. The program would emphasize the perpetuation of a wild, free-ranging grizzly bear population and provide for safety of park visitors. It would consist of elements of education and enforcement; reduction of unnatural visitor-bear contacts, including closing some areas to visitor use; control of problem bears; collection of statistics and monitoring bears; continued bear research; and provision for supplemental feeding at times of critical food shortages. The consequences would be beneficial to grizzly bears by reducing man-generated food sources, but humans would experience some restrictions of their behavior in the park.

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SUMMARY

Major conclusions of the statement: The National Park Service proposes to implement a modified grizzly bear management program which emphasizes the perpetuation of a wild, free-ranging grizzly bear population in Yellowstone National Park. The program would minimize conflicts between humans in the park and grizzly bears by reducing man-generated food sources and by regulating visitor distribution in the park.

The principal impacts are: (1) Reestablishing grizzly bear natural food source feeding habits and eliminating opportunities to establish and/or maintain unnatural relationships with man. (2) Temporary disturbance of grizzly bears associated with readaptation to natural food sources. (3) Providing for supplemental feeding at times of critical food shortages. (4) Hazardous contacts and confrontations between humans and grizzly bears will be minimized, thus reducing the potential for personal injuries occurring to humans in the park. (5) Since the program emphasizes the principle of the regulation of man (except where unavoidable necessity exists to regulate intractable bears), humans in the park (visitors to and residents) will experience restrictions of their behavior, inconveniences, and constant reminders of the dangers of their environment - all of which may detract from the enjoyment of the park. (6) A commitment towards reversing a trend of an indicated declining grizzly bear population.

Issues: Concerns expressed on the 1974 draft environmental impact statement (DEIS) concentrated on (1) the need for cooperative bear management practices among difference agencies, (2) research methods and interpretation of data, (3) methods to get bears to rely on natural food sources rather than man-made sources, (4) methods and strategies of reducing or avoiding conflicts between bears and people, and (5) grizzly bear population dynamics.

Other issues raised during public review of the 1981 revised DEIS included (1) effects of park visitation and human encounters on grizzly bear behavior, (2) monitoring procedures to detect behavioral changes in bears, (3) effects of different agency management philosophy and practices on bear behavior, (4) need for Section 7 consultation, (5) reducing bear mortality, and (6) use of most recent research data, including an indicated decline in the population of grizzly bears.

The U.S. Fish and Wildlife Service issued a "no jeopardy" biological opinion on the proposed action on June 18, 1982 (see Appendix D).

Alternatives: All the above issues are included in the discussions for the following alternatives considered in this final environmental impact statement (FEIS):

A. Implement a Modified Management Program (proposed action)
B. Status Quo, Continue Present Management Program (no action)
C. Further Restrict Visitor Use

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I. PURPOSE OF AND NEED FOR ACTION

Management of both grizzly (Ursus arctos horribilis) and black bears (Ursus americanus) has been a significant problem since the early days of park administration in Yellowstone. The easy availability of garbage, inadequate storage of campers' food and deliberate feeding of bears by both visitors and the government led to alteration of the bears' natural feeding habits and to conflicts between bears and people. These resulted in injuries, property damage, and ultimately, the transplanting or killing of bears as a control measure.

It has long been recognized that the bear's adaptation to man's food or garbage was the root of the problem, but prior to the 1960s little had been done to help the situation. The public feeding area at Otter Creek (a garbage dumping "arena," complete with bleachers where visitors could watch grizzlies being fed) was closed during World War II, but with open garbage dumps remaining, this closure only temporarily rearranged the bears' feeding habits. It may have had some effect by removing a feeding spectacle from the eye of the visitors, however.

Experiments began here by the mid-1960s with "bear-proof" garbage cans, and garbage collection schedules were increased and tightened to prevent accumulation of garbage. The large open-pit dumps were not closed until the fall of 1970, and proper storage of food in campgrounds was not required by regulation until 1971. Thus the grizzly bear management program was not a sudden development but rather the culmination of progressive steps taken over a period of nearly four decades for which we have records.

The controversy surrounding the relatively rapid closure of the two remaining open-pit garbage dumps was the primary influence in the decision to prepare the DEIS in 1974. A reevaluation of the grizzly bear management situation was presented in a revised DEIS. The most recent evidence by the interagency grizzly bear study team indicates a possible decline in the grizzly bear population. This final environmental impact statement (EIS) presents the findings from reviews of the earlier statements. It focuses on alternative means of managing grizzly bears in Yellowstone National Park and the Greater Yellowstone Ecosystem.

The Forest Service has published the 1980 Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area (hereinafter referred to as the Guidelines). The National Park Service adheres to those Guidelines and Yellowstone National Park is designated as Management Situation 1. The U.S. Fish and Wildlife Service published the Grizzly Bear Recovery Plan, approved January 29, 1982 (hereinafter referred to as the Recovery Plan). The National Park Service concurs with the concepts of that plan. This final environmental impact statement (EIS) indicates that the management of grizzly bears in Yellowstone National Park is compatible with both the Guidelines and the Recovery Plan. The intent of this plan is to maximize the National Park Service's ability to sustain aviable grizzly bear population according to the factors that it can influence and/or control.

II. ALTERNATIVES, INCLUDING THE PROPOSED ACTION

A. Alternative A, Implement A Modified Management Program (proposed action)

Under this alternative, the National Park Service would revise the past grizzly bear management of Yellowstone National Park so as to place greater emphasis on preservation and perpetuation of grizzly bear habitat and population. Human safety would not be minimized, but there would be greater restrictions on some visitor activities, closer consultation with the U.S. Fish and Wildlife Service on the handling and disposition of bears, increased efforts in cooperating with agencies outside of Yellowstone National Park to reduce grizzly bear mortality and improve habitat, and provision for supplemental feeding of grizzly bears at times of critical natural food shortages.

The program would be designed to maintain as much as possible the natural ecosystems in Yellowstone National Park with the grizzly bear as an integral part. It would have a further design to regulate those activities of man that tend to attract bears to developed areas or backcountry use areas of the park and which often result in individual bears becoming habitual users of artificial food sources. Thus, the program would be concerned with preventing the causes of man-bear conflicts rather than treating the symptoms.

The program would be known as the Yellowstone Bear Management Policy. The Policy would be reviewed annually, and a specific plan would be issued each year. See Appendix B as an example. It would apply to both black and grizzly bears, with provisions that are specific to either species noted on a case-by-case basis. The basic elements of the program would be (1) overall objectives; (2) education and enforcement; (3) reduction of unnatural visitor-bear contacts; (4) control of problem bears; (5) statistics and monitoring; (6) continue bear research; and (7) supplemental feeding. Its specific provisions are as follows:

1. Objectives

Preserve and maintain natural populations of bears as part of the park's native fauna and provide for safety of park visitors.

2. Education and Enforcement

The objective is an informed public, with appreciation of the esthetic value of bears, and an awareness that exposing bears to unnatural food sources may lead to human injury or to the bears' destruction or both.

An active information program would be directed at both visitors and employees to inform them of policies and goals of bear management, and the reasons for these.

Review bear warning literature annually for pertinence to objectives. Incinerate all old literature after preserving an example of each in the research library.

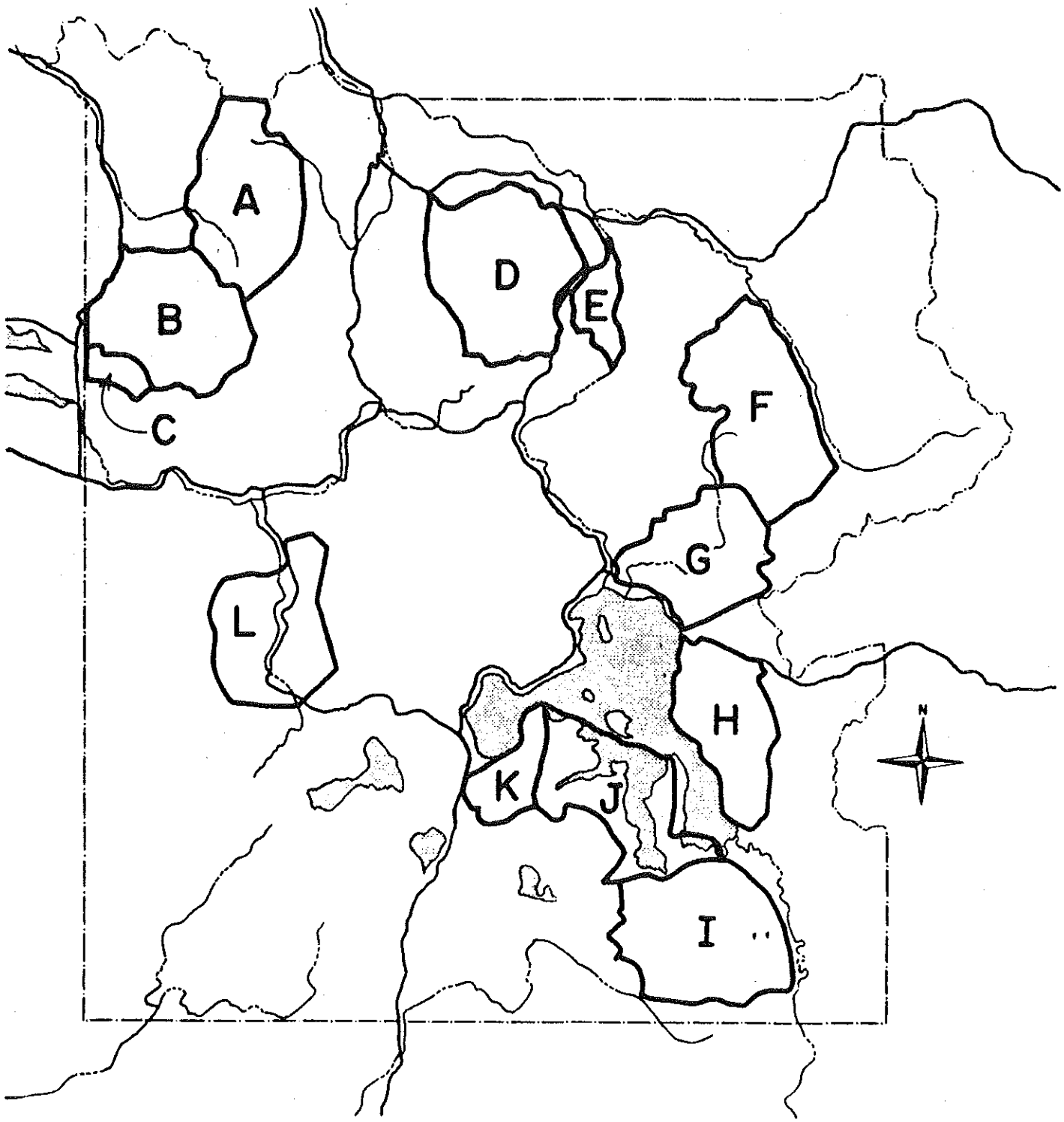


FIGURE 1

GRIZZLY BEAR HABITAT/HUMAN USE ADJUSTMENT AREAS

SOURCE: Yellowstone National Park Files

The dispensing of literature warning of potential bear/human conflicts pertinent to entrances, campgrounds, and to backcountry campers would be the responsibility of the district ranger, delegated to those in direct contact with the public.

Signs warning of potential people/bear conflicts would be used at entrances, campgrounds, cabin and trailer areas, and trailheads. Durability of signs would be improved. Campground displays would be improved to convey information in a more meaningful manner.

Regulations concerning bear feeding and/or bear molesting and the improper disposal of trash or garbage would be strictly enforced.

Campground visitors would be contacted each evening regarding bear danger and food storage, and walk through contacts would be made in any campground loop where bears have been active within the past week.

When backcountry use permits are issued, each backpacker or horseback party would be given a copy of Beyond Road's End, In Grizzly Country, and/or other material relating to travel and camping in grizzly country. Day hikers and backpackers would be notified of areas that are restricted or closed to travel because of potential for human/bear conflicts or for adverse effects on bear population and habitat.

3. Reduction of Unnatural Visitor Bear Contacts

The objective is to eliminate unnatural attractants to bears before control actions are required and before contacts occur.

All outdoor trash cans would be of a bear-resistant design and equipped with a removable plastic liner.

All trash cans that are not of the bear-resistant design, whether located at employee residences, administrative offices, concessioner food services, stores, lodges, cabins, or other concessioner facilities, would be located inside the building served.

The park would pursue funding to develop and install a dishwater disposal system and food lockers at all automobile campgrounds.

Roadsides, campgrounds, and all other areas of concentrated visitor use would be maintained litter-free.

Garbage pickup would be carefully scheduled to prevent overflow of cans and leave as little garbage as possible overnight. Campground garbage pickup will be as late in the day as possible. Plastic can liners would be changed at every pickup. Schedule for pickup at roadside pullouts would be dicatated by public use level. Overflow of cans would be prevented. Garbage cans would be cleaned every two to three weeks.

When loaded, trash collection vehicles would proceed directly to the appropriate transfer station, except that after late evening pickups, trash could be stored on the collection vehicle inside a closed utility building within a fenced utility area.

Mishandling of garbage by park residents would be reported to the responsible employee's supervisor for remedial action. Repetition of mishandling, or any case of deliberate feeding, would result in a citation and would be grounds for dismissal or loss of in-park residence privileges.

Any area may be closed to human use and/or specific types of visitor activities for the purpose of minimizing people/bear conflicts. Additionally, the Fishing Bridge development complex, including concessioner facilities and campground, and the following areas would be closed on a permanent or seasonal basis, or restricted as to types and levels of public use, where the impact of man has a demonstrated adverse effect on the bear population or bear habitat. (see Figure 1).

Grizzly Bear Habitat/Human Use Adjustment Areas

A. Gallatin 47,251 acres

No off-trail travel
Bighorn Pass Trail closed to travel
Sportsman Lake Trail closed to travel
Fawn Pass Trail limit to four or more persons per party
Use limited to four parties per week
No overnight camping

Adjustment Period: March 10 - November 10

Area Resources: Lush vegetation, white bark pine, open meadow/forest cover diversity, variety of vegetation community types, pocket gophers, and major elk summer-fall range.

The area provides food resources to carry bears during poor food years. The Gallatin has a high density grizzly bear population and is a major cub producing area.

Most of the park's major backcountry human/bear confrontations have occurred in this area.

B. Grayling Creek 44,371 acres

No off-trail travel
Grayling Creek available to fishing from park boundary north to gravel pit (elev. 7166).

Adjustment Period: March 10 - November 10

Area Resources: Lush riparian vegetation, variety of vegetation community types, elk spring elk mortality, and open meadow/forest cover diversity.

The area is important all-season habitat, with a high density grizzly bear population.

C. Richard's Pond 5,838 acres

Closed to travel
(Gneiss Creek Trail not within this area)

Adjustment Period: March 10 - November 10, (may be modified according to temporary fluctuations in bear population density).

Area Resources: Variety of vegetation, lush riparian vegetation, and spring elk mortality.

This is a moderate density grizzly bear area, with locally and temporarily high density of the area during all seasons.

D. Washburn 62,236 acres

No off-trail travel

Adjustment Period: March 10 - November 10

Area Resources: White bark pine, variety of vegetation community types, elk, spring elk mortality, and open meadow/forest cover diversity.

The area has been closed since 1980, due to Interagency Grizzly Bear Study Team trapping. The present closure of this high density grizzly bear area is providing a fine opportunity for park visitors to view moose, elk, and bears from the road and turnouts overlooking the valley. The closure has actually enhanced the park visitors' "use" of the area.

F. Mirror Plateau 60,122 acres

No off-trail travel

Adjustments Period: August 15 - November 10

Area Resources: Lush riparian vegetation, white bark pine, variety of vegetation community types, major elk summer-fall range, major late summer-fall bison range, bison mortality, and open meadow/forest cover diversity.

The area is extremely important late summer/fall high density grizzly bear and provides important fall food source for the Pelican Valley population.

G. Pelican Valley 40,168 acres

Closed to travel
Open period use limited to four or more persons per party
No overnight camping
Ue limited to four parties per week

Adjustment Period: Closed April 1 - June 30; other adjustments July 1 - November 10.

Area Resources: Major riparian habitat, variety of vegetation community types, open meadow/forest cover diversity, major bison mortality, elk mortality, pocket gophers, and spawning streams.

The Pelican Valley is a high density grizzly bear area, and is extremely important spring/summer habitat, and is a major bear cub production area.

H. Clear Creek 37,229 acres

No off-trail travel
Clear Creek Trail closed to travel
U.S. Fish and Wildlife Service fish trap areas (Clear Creek) closed to travel

Adjustment Period: April 1 - July 15

Area Resources: Two of the park's major cutthroat spawning streams, elk, and elk mortalities (Brimstone Basin area).

This is a high density grizzly bear area during the spawning season.

I. Two Ocean Plateau 58,033 acres

No off-trail travel

Adjustments Period: March 10 - November 10

Area Resources: White bark pine, variety of vegetation community types, major elk summer-fall range, elk mortalities, and open meadow/forest cover diversity.

This area has a concentration of bears, including a major cub producing population.

J. Lake Spawn 28,374 acres

Campsites, shoreline, streams closed to travel

Adjustment Period: May 15 - July 15 (area and site closures are flexible and related to spawning and bear activity).

Area Resources: Major cutthroat spawning streams, and an interspersion of lush vegetation and riparian streambanks and shoreline.

High concentrations of grizzly bears frequent this area during the spawning season.

K. Riddle Lake 14,674 acres

Closed to travel

Adjustment Period: April 15 - July 15

Area Resources: Cutthroat spawning stream, and locally lush riparian vegetation.

Common use of Solution Creek, Riddle Lake, and adjacent areas by grizzly bears during spawning season.

L. Firehole 41,608 acres

Closed to travel

Adjustment Perid: March 10 - June 10

Area Resources: Major spring bison and elk mortalities, major bison calving area, and early snow-free vegetation.

The area historically supports a high spring concentration of grizzly (and black) bears, including family groups.

Total area closed and/or restricted: 452,995 acres.

In this regard, campground opening and closing dates would be manipulated to provide for human safety. Where the potential for human/bear conflicts is extreme during the on-going visitor use season, areas would be closed by posting. Use of campgrounds located in or adjacent to areas of high grizzly bear density may be restricted at times to hardsided trailer units, pickup campers, and self-contained recreation vehicle use only. Entry into closed areas on official business would be coordinated through the district ranger.

Leaving food unprotected overnight in campgrounds is prohibited (see Special Regulations 36 CFR 7.13 (g) (3)).

Backcountry campsites would be frequently monitored and maintained litter-free. Rotation of backcountry campsites would be judiciously utilized to prevent the degree of concentrated use that may result in a garbage or odor buildup attractive to bears.

Backcountry campsites and/or trails being frequented by bears may be closed to public use until the bear is no longer an apparent hazard. Through travel may be restricted to large (four people or more) parties or to parties on horseback, at the district ranger's discretion. Closed campsites would not be reopened until the site has been inspected, all identifiable attractions removed or neutralized and the bear(s) have apparently left the area.

Camping in unauthorized sites and/or with improper equipment would be prohibited. Violators would be cited.

The "pack-in, pack-out" policy would be enforced in the backcountry.

4. Control of Problem Bears

The objective is to effect prompt removal of bears from developed areas when elimination of attracting food sources or closing areas to public use has not deterred bears' entry into developed areas, pursuant to authority in 50 CFR 17.40.

Each spring an annual bear management plan would be prepared, which will detail specific management and reporting procedures. (see Appendix B).

Thorough training in trapping techniques and use of firearms would be mandatory before employees are allowed to handle bears. Use of immobilizing drugs would be restricted to those qualified through additional specialized training. Drug qualification standards are documented and enforcement of same would be the responsibility of the district ranger. The park staff would pursue improvement of traps so as to cause less trauma to bears.

Condition of campgrounds and other high use areas would be maintained as in item 3 above coincidental with trapping programs to remove bears from these areas. Traps would not be baited or set in any area unless a bear is known to be present.

Baited traps would be identified by conspicuous warning signs and set traps would not be left unattended in public use areas during busy, daylight hours. Only personnel with specific assignments on control action teams would be present at the site during capture and handling of bears. No bystander would be permitted.

No bear would be captured for transplanting or destroyed in a backcountry area unless its level of agressiveness reaches a point as determined by Service biologists that the probability of human injury is high, or other alternative methods or providing for human safety cannot be employed.

Necessity for trapping, trapping hours, and procedure would be the responsibility of the district ranger. No experimental trapping or immobilizing would be permitted without his knowledge and approval.

Experimental methods of fencing, repelling, trapping, or immobilizing bears would not be used until these projects were approved by the superintendent.

All bear transplants would be coordinated through the office of the staff specialist in charge of bear management.

Bears would not be released outside the park except with the concurrence and cooperation of the Fish and Game Department and the U.S. Forest Service in the receiving state.

Bears captured or transplanted would be marked while immobile with a small, strap type ear tag.

No other marks or tags would be permitted without the approval of the superintendent.

No bear would be destroyed for exhibiting its natural behavior--such as the defense of natural food sources or its young.

Bears being removed from the system may, upon consultation with the U.S. Fish and Wildlife Service and with the approval of the superintendent, be donated to public zoos or given to any requesting state for reestablishment of populations. If there are no requests for live specimens, or it is impractical at the time to fill the request, the bear may be dispatched. Carcasses of grizzly bears would be processed as scientific specimens (a) for in-park research, or if not needed for that purpose, (b) will be transferred to scientific collections at recognized research or public display entities. Black bears may be returned to the ecosystem.

Any bear killed in the park by any means would be reported by phone or radio as soon as possible to the communications center.

The decision to destroy a bear would be made by the superintendent pursuant to the provisions of 50 CFR 17.40b(i)C. The U.S. Fish and Wildlife Service Bear Recovery Coordinator would be consulted in accordance with a programmatic memorandum of agreement.

Bears captured on adjacent forests or the JDR Parkway may be released inside the park, with the approval of the superintendent, or his delegate, and after consultation with the Bear Recovery Coordinator. Bears adapted to dumps or garbage will not be considered for such release. Each proposal for accepting a bear from outside the park will be considered on its own merits and in light of the current park situation.

5. Statistics and Monitoring

The following information would be reported by radio or telephone to the communications center immediately.

Sightings of grizzly and black bears-description of bear(s), location, activity. This includes any occurrence of a bear in a developed area.

Any bear incident or management action which would later be reported on a case incident report.

Confrontations with bears, in which evasive action was required to avoid contact.

Any known death of a bear, regardless of cause.

Any closure or restriction of trails or areas because of bear activity.

In addition to the above, additional bear information as directed in current memoranda would be reported to the communications

center on a daily basis. The communications center would assemble a parkwide bear log from this information. The resources management office would maintain the permanent park bear log records.

The special case incident report form (10-343), overtyped for bear reports, would be used to report all cases of property damage by bears, including vehicles that are damaged from striking bears. It would also be used to report all cases of human injury inflicted by bears and all management actions concerning bears.

The park staff would program funds to establish bear management technicians in each district office as well as in the bear management office.

All handling of grizzly bears marked for research purposes would be coordinated with the interagency grizzly bear study team.

6. Continue Bear Research

Research and monitoring are integral parts of bear management. The objectives of this program is to provide management with comprehensive factual knowledge of bear distribution, population dynamics and trends, behavior, ecology of human-bear interrelations, and to evaluate the effectiveness of management programs affecting or affected by the grizzly bear population.

A vigorous integrated research program would be continued, including:

the development of census techniques, including a formal field monitoring system that would provide realistic population trends and estimates of wild, free-ranging black bear and grizzly bear within and adjacent to the national park. Research on population trends would include attempts to establish what a gentically viable grizzly bear population is for Yellowstone, and causes for reaching various stages of population trends.

determining poulation dynamics, seasonal and annual distribution patterns, and movement of grizzly bears within national park and adjacent national forest lands

determining habitat requirements and the ecological relationships of the grizzly bear to other fauna and to plants of the national park and adjacent national forest ecosystems. This would include determining long term effects of bear/bear relationships and competition for habitat, and bear/human relationships, identifying the tolerance levels, reactions and results of the pressures placed upon the bear population by encroaching civilization and human encounters. The research would examine how food factors affect bear behavior, potential reaction to human intrusions, and bear movements. Data would provide management with more information to adjusting human use in specific areas (carrion following severe winter, pine nut crop, etc.). Special attention would be given to riparian habitat and determining the importance of this specific streamside/lakeside oriented habitat as it relates to the grizzly bear

which presently inhabits many such areas in what seems to be concentrations.

determining immediate and probable long-term stresses and impacts on bears caused by various land use practices within and adjacent to the park. This would include an evaluation of the various types and intensities of visitor use activities, resource use, land development, and other management actions. A study of external influences in the Greater Yellowstone Area is particularly essential. The study would provide important baseline data involving traditional human activities of the area and their increases as well as new impacts of the area, Regional population trends, recreational uses, and all developmental activities within the overthrust belt. The study would eventually indicate spacial relationships in bear habitat, providing for the survival of a traditional (prior to white man) population of grizzly bears.

determining the effectiveness of communications with the public, and the public attitudes regarding grizzly bears. This data would be used to improve communications and to develop the public attitude and understanding of maintaining a viable grizzly bear population.

In carrying out the above general research objectives, the efforts of National Park Service scientists and the interagency grizzly bear study team would be supplemented by encouraging outside scientists from the diverse disciplines of physical, biological, and behavioral sciences to undertake studies within the national park and to contribute to the understanding of park ecosystems. Such additional research efforts would, of course, be coordinated and regulated under a permit system, pursuant to 50 CFR 17.32.

7. Supplemental Feeding

The objective is to recognize that deliberate manipulation of the natural ecosystem by using supplemental feeding during critical periods may be necessary to support and maintain a threatened grizzly bear population which appears to be declining (Knight, et al, 1982).

Strict sanitation standards in the campgrounds have significantly reduced the attractiveness of the campgrounds to the grizzly bears. A large variety of foods, however, are found throughout the grizzly bear's environment and the bears will most often be found where the food is most abundant and available. Elk and other large mammal carcasses are most abundant during spring and early summer. Some natural deaths of elk, moose, bison, and other mammals, however, occur throughout the, and the grizzly bear currently has a natural protein diet regime.

Nevertheless, in an effort to perpetuate this threatened species, carcasses of elk or other large mammals would be provided for consumption by bears in emergency situations when Service biologists determine that natural foods for bears reach critically low levels.

For example, "in the fall of 1980 the crop of whitebark pine nuts was mediocre to poor throughout the study area. The winter

of 1980-81 was very mild with little snow cover . . . (and) virtually no ungulate winterkill. Grizzlies were observed on carcasses only three times . . . from March through May. Carcass surveys . . . revealed no dead elk . . . Grizzly bears trapped during May and June were all thin and in poor condition . . . At least two yearlings (in the study area) were believed to have died during the spring from malnutrition. One adult female died from a combination of old age and malnutrition . . . Bears were still thin by August when fat deposits should have started accumulating for denning . . . the 1981 nut crop (usually available to bears in late August) was virtually a failure throughout the study area . . . The result was that bears sought food from people." (Knight, et al, 1982)

8. Interrelationships with Other Programs

While the grizzly bear management program is concerned primarily with perpetuating a wild, free-ranging population of grizzly bears within Yellowstone National Park, it is directly related to a number of programs of other federal and state agencies and to public and private activities outside the park boundaries.

a. Solid Waste Management in the Region

The inseparability of bear management and solid waste management is a situation common to the gateway towns of West Yellowstone, Gardiner, and Cooke City, to private citizens, and land-managing agencies. Problems involved are longstanding and have not been created by recent, past, or proposed actions within the park.

Open pit dumps have been used in this area for decades, and while most of those in the park were closed by 1971, the small dump near Gardiner (inside the park) was in operation through 1977. Through the cooperation of state and county officials and the Forest Service, the West Yellowstone dump was replaced by a sanitary landfill in 1972, and by fall of 1978, the Cooke City and Flagg Ranch dumps, in addition to the Gardiner dump, were closed. As of the 1979 season, all garbage from Yellowstone National Park and from the three gateway towns is hauled to sanitary landfill facilities outside the park.

b. Other Conflicting Activities Outside the Park

According to Knight (1976), grizzly bears do not confine themselves within the park boundaries but wander freely in and out. Two radio-collared bears spent the entire 1976 season outside the park and others frequently crossed both state and park boundaries. See the description below (item 11) for the grizzly bear study area.

Logging operations, commercial developments, summer home areas, and livestock grazing all contribute to situations that may result in conflicts with grizzlies. This, in addition to other factors, has led the Forest Service, in cooperation with the National Park Service and respective state game departments, to develop the Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area.

The Yellowstone Bear Management Policy is a part of the Guidelines as appendix 6, and the principles of the Yellowstone Bear Management Policy are included in the management provisions of situation

1 of the Guidelines (see Appendix C of this FEIS). Appendix 3 of the Guidelines is the "Interagency Agreement for Management Involving Grizzly Bears in the Greater Yellowstone Area, for Determining Grizzly Bear Nuisance Status and for Controlling Nuisance Grizzly Bears on National Forest Land." The cooperating agencies mentioned above are all signatory parties to this agreement. The National Park Service signed on June 16, 1980.

Finally, the Guidelines are cited in the Grizzly Bear Recovery Plan. This plan provides recommendations for actions necessary for the maintenance, enhancement, and recovery of the grizzly bear in selected areas where it is known to exist in the coterminous 48 states.

c. Grizzly Bear Mortality Outside the Park

Detailed and accurate records were not kept of grizzly bears mortality outside the boundaries prior to garbage dump closure inside the park, but there is little to suggest that dump closure within the park has increased bear mortality outside. Some of the bears removed by the state of Montana in conjunction with the closure of the West Yellowstone dump in 1971 may have formerly used both the West Yellowstone dump and dumps inside the park, or may have moved from park dumps to the dumps outside the park boundary. During the period 1970-74, a total of 83 grizzly bears were reported killed, for other than control purposes, adjacent to Yellowstone National Park. Hunting of grizzlies in some areas adjacent to the park was legal during this period (Cole, 1976).

Following classifications of the grizzly as a threatened species in 1974, both Wyoming and Montana ceased the issuance of grizzly hunting permits within the greater Yellowstone ecosystem. Idaho had not permitted the hunting of grizzlies for many years. This completely removed hunting as a threat to the grizzly population in the Yellowstone area. An average of 8.7 grizzlies have been killed annually outside the park during 1978-1981 (see Table 9). Those are attributed to illegal kills, road kills, sefl-defense, and similar reasons. Unknown kills undoubtedly occur that are never reported or verified.

9. USFWS Proposal on Critical Habitat for the Grizzly Bear

On July 28, 1974, (Federal Register, Vol. 40, No. 145, p. 31734) following a review of the status of the grizzly bear by the U.S. Fish and Wildlife Service, the grizzly was listed as a threatened species in the 48 coterminous states. Following this classification, the Fish and Wildlife Service began a survey to delineate the critical habitat of the grizzly.

Federal land management agencies and involved states were asked to comment on the proposed critical habitat, and public hearings were held in area cities during December 1976. Considerable adverse reaction to the proposal came from both the government sources and the public, and little progress was made on an official designation. The U.S. Fish and Wildlife Service voluntarily withdrew the proposal to designate critical habitat (Federal Register, vol. 44, no. 45. March 1979) to comply with the provisions of the Endangered Species Act of 1976.

10. Interagency Grizzly Bear Study Team

The interagency grizzly bear study team, initiated in 1973, consists of representatives from the National Park Service, Fish and Wildlife Service, Forest Service, and since 1974 the states of Wyoming, Montana, and Idaho. This team research effort provides immediate and long-range information needed by various management agencies on the grizzly bear that inhabit the Yellowstone system. With increasing demands on most resources in the area, it is apparent that current quantitative data on grizzly bears is urgently required for management decisions.

Basic research on grizzlies was carried on for several years within Yellowstone National Park proper (Craighead et al. 1974). However, changes in management operations by the Park Service--mainly the closing of garbage dumps--have markedly changed some habitat parameters. Thus, current research efforts are needed to define and evaluate grizzly bear population dynamics. Objectives of the study are to determine the status and trend of the grizzly bear population, the use of habitat by bears, and the effects of land management practices on the bear population.

11. The Study Area

The study area is contained within the following boundaries: beginning at the junction of 45° 20' N latitude and 111° 40' W longitude, south to 44° N latitude, then east to 111° 10' W longitude, then south to 43° 35' N latitude, then east to 110° 05' W longitude, then north to 43° 46' N latitude, then east to 109° 25' W longitude, then north to 45° 20' N latitude, then west to 112° 40' W longitude the point of beginning (figure 2).

Most of the area within this boundary either contains or has the potential of containing viable grizzly bear populations. Research efforts are largely contained in this area, although monitoring for distribution extends beyond the boundaries. The boundaries also contain some tracts such as metropolitan and agricultural areas that are not suitable grizzly bear habitat.

While the study is in progress, all research and monitoring of the grizzly bear population conducted by the park staff is fully integrated into the team's investigation. Specific objectives for the team have been outlined by representatives of the three federal agencies involved at a metting in Washington, D.C., on December 14, 1973, as follows:

Habitat considerations.

Evaluation and analysis of habitat including biological, physical, and cultural features of the environment and their positive or negative influences on the grizzly bear.

Extent.

Land use impacts (recreation, livestock management, timber management, nonrecreational development, weather modification, wildlife and fishery management, agriculture, fire management).

Population considerations.
Population numbers.

Distribution.

Population trends natality, sex; age structure; and causes of mortality.

Behavior (migrations, movements, and social behavior).

Trophic ecology.
Food habits.

Food chain relationships and nutrient cycling.

Interspecific competition.

Intraspecific competition.

Parasites and disease.

12. Forest Service Management Program

The Guidelines, while not calling for the elimination of grazing, establishes standards for the activity in relation to grizzly bears. The Guidelines stratify grizzly habitat in the periphery of the park in the following manner: (1) grizzly bear is the primary use on the area; (2) grizzly bear is an important but not the primary use on the area; and (3) grizzly bear is an undesirable use on the area.

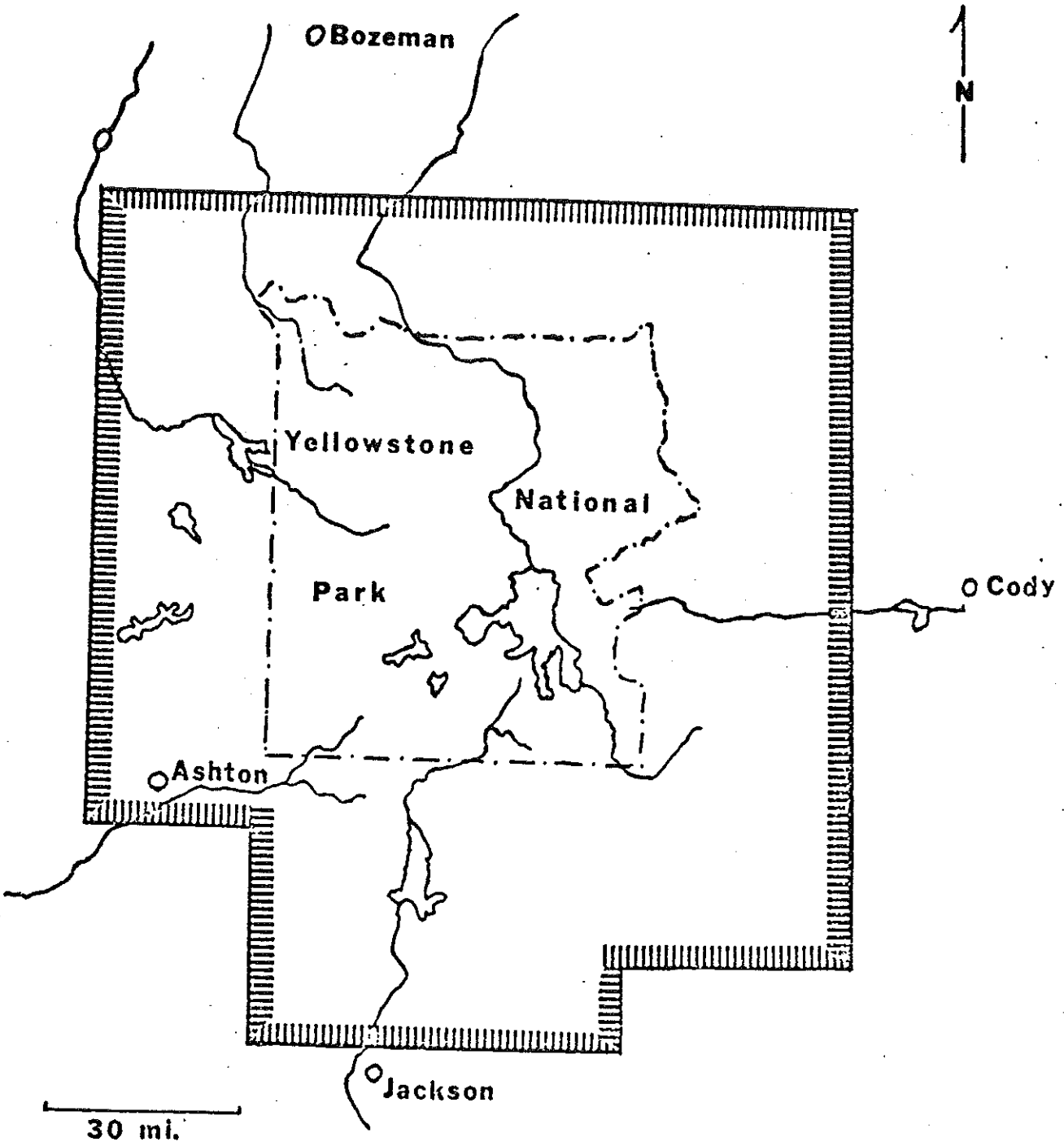
Under category 1, all grazing permits will include a clause providing for cancellation or temporary cessation of activities if such are needed to resolve a grizzly-human conflict situation. Generally all wilderness areas on the park's periphery are primarily in category 1, with some portions in category 2 and no portions of these in the third category. Nonwilderness areas in the ecosystem include category 3, but while grizzly habitat needs are not a consideration in this category, directives are provided, such as control of garbage, for avoiding conflicts with bears. Thus sheep grazing is not eliminated as a source of conflict, but the Guidelines are applied to other activities such as timber and fire management, wildlife management, recreation management, and management of minerals, watersheds, and special uses.

Under Alternative A, the National Park Service would actively seek Forest Service stringent oversight and enforcement of category 1 situations regarding grazing permits. Additionally, Forest Service action would be actively sought to inform and educate hunters in hunting camps on practices to avoid attracting grizzlies, and also to stringently enforce regulations.

B. Alternative B, Status Quo, Continue the Present Management Program (No Action)

With this alternative the National Park Service would continue to implement an on-going and continually updated grizzly bear management program initiated in the 1960s. The purposes of this alternative would be

FIGURE 2



Interagency study area. Source: Knight, R. 1976, Annual Report of Interagency Study Team, USDI-NPS Misc. Report #9.

similar to those of Alternative A in that the intent would be to perpetuate a wild, free-ranging grizzly bear population in Yellowstone National Park, and to minimize conflicts between humans in the park and grizzly bears.

However, under Alternative B the park manager would retain more flexibility as to actions taken in managing grizzly bears and providing for visitor use. As opposed to mandatory closing of areas to protect grizzly bears and habitats under alternative A, Alternative B would keep the option as to whether any area of the park may be closed to human use and/or specific types of visitor activites to avoid human/bear conflicts or to protect the bear population or habitat.

Educational efforts would be similar to Alternative A, but would not need to be as intense to explain mandatory closed areas as under Alternative A.

Enforcement of sanitation standards and practices, campground regulations, monitoring procedures and research needs would be similar to those given for Alternative A.

Actions in controlling problem bears would be expected to continue at the level which has averaged less than one bear per year destroyed since 1973 (see Table 5). Such actions would be subject to mitigating criteria similar to that set forth under Alternative A.4, above.

Coordination with the management programs of agencies outside Yellowstone National Park toward protection of grizzly bears would continue at the present level, with any new initiatives pursued only on an opportunistic basis.

C. Alternative C, Further Restrict Visitor Use

One solution to people-bear confrontations in the national park is to eliminate overnight camping in the park. The rationale for such a proposal is that injury to persons, destruction of private property, and the destruction of bears are the result of human carelessness and ignorance. During preparation of the Yellowstone National Park Master Plan, the implications of eliminating overnight accommodations were evaluated, and it was concluded that the possible benefits of such a solution would not justify the resultant reduction of visitor opportunities to use and enjoy the park environments. As it relates to people-bear conflicts, effects of eliminating overnight accommodations can be approximated by the establishment of campgrounds as bear-free enclosures. This alternative was, therefore, considered as a possible solution to the people-bear conflict. The concept is similar to methods employed in some wildlife parks in Africa where visitors and hazardous wildlife are physically separated. The advantage of this alternative is that it would keep bears out of areas that have been designated exclusively for the use of people, without seriously disrupting the distribution, movement, and behavior of the bears. The method of creating bear-free enclosures, however, poses complex engineering and aesthetic problems.

Fencing has been considered as the most practical method of protecting campgrounds, principally the Fishing Bridge Campground.

Fences, however, must be of a special construction to stop the passage of a grizzly bear. Bears have been known to dig under, climb over, and go through sturdy, woven wire fences topped with three stands of barbed wire. Woven wire fencing supplemented with electric fencing is more effective. The conventional fence charger, however does not have sufficient voltage to disturb a grizzly. The thick fur and foot pads of the grizzly bear apparently are an effective insulation. Park personnel previously developed a modified electric fence charger (turned on as necessary) that appears to be effective in discouraging bears from entering sanitary landfills. This gives the inquisitive bear a jolt of approximately 12,000 volts at 22 microamps. The charge is not lethal nor injurious to the bears, but persons receiving an electric shock of this magnitude would experience unpleasantness and possibly serious injury. Protective fences, therefore, would have to be designed and located to minimize the possibility of human contact with the fence.

D. Comparison of Alternatives

Table 1 displays a comparison among the various alternatives and their consequences..

There are primary differences of the impacts between the proposed action and those of the alternatives. The proposal relies on natural foods for grizzly bears and greater efforts at informing the public about bear behavior, and mandatory cosing of areas to protect bears resulting in a wider dispersal of the bears and reduced bear-human conflicts. The alternatives would have greater emphasis on reducing bear-human conflicts.

E. Alternative Considered But Rejected: Eliminate Grizzly Bears from the Yellowstone Ecosystem

This alternative, as stated, would place the use of the park by people at a higher priority than the preservation of local faunal form that under some circumstances poses great hazards to man. There is no question that the grizzly bear does pose a threat to the safety and lives of some individuals who find themselves deliberately or inadvertently in conflict with grizzly bears. Convinced tht people and grizzly bears are incompatible and persons have advocated that grizzly bears be eliminated from national parks (Moment 1968).

Grizzly bears could be eliminated from the area by two methods: (1) eradication, or (2) capture and relocation to areas outside the region. The latter method, of course, is the more complex of the two. The restocking or reestablishment of a viable grizzly bear population has not been attempted, and a thorough study and analysis of the diverse factors involved would be required before a potentially successful program could be designed. This alternative would not be consistent with the agreed-upon Guidelines or with the Recovery Plan. There are, however, areas in the western United States that may have potential for the reestablishment of grizzly bear populations.

Eliminating grizzly bears from the park would not be consistent with the purpose of the park "for the preservation . . . of all . . . natural curiosities, or wonders . . . and their retention in their natural condition." Farther, such an alternative would likely be in violation of

Section 7 of the Endangered Species Act (16 U.S.C. 1536 (a)(2) which directs all Federal agencies to further the purposes of the Act. This is to be done by taking whatever action is necessary to insure that actions authorized, funded or carried out by them are not likely to jeopardize the cotinued existence of endangered or threatened species. The grizzly bear is listed as a threatened species (50 C.F.R. 17.11).

For the above reasons, eliminating grizzly bears from the Yellowstone ecosystem is not considered a viable alternative.

TABLE 1. IMPACTS

Alternatives	Grizzlies	Visitors	Park Management	Total Ecosystem	Outside Management Agencies	Peripheral Public Use
A. Modified Plan (Proposed Action)	Mandatory protection of certain habitats. Rely on natural foods, but provide emergency supplemental feeding. Fewer problem individuals. Emigration beyond park. Less competition, cub mortality. Feeding more diversified Less handling in traps, etc. Fewer possible illegal kills outside the park. May be artificially concentrated. Social habits may be altered. Local population size may be altered. Dependence on man may be increased.	Mandatory areas closed to entry. Injuries and property damage reduced. Fewer bears seen. Bears seen are wild. Activity restricted in auto camps and in backcountry Activity incentive may be reduced by restrictions. More restrictive fishing regulations. Possible danger from trapping activities. Visitors may see more bears in selected areas. Will not see true picture of grizzly ecology. Travel would be restricted in feeding areas.	Expense of garbage removal, public information activities. Need for additional patrols, contacts. Comprehensive research program. Cooperative efforts with outside agencies intensified Need for development considerations. Necessity to select feeding areas and provide carcasses for food. Rearrange backcountry travel routes and campsites to avoid feeding areas. Possibly fewer problems in campgrounds, but need now questionable. If feeding area is saturated, spinoff may be to campgrounds.	Diversity and naturalness enhanced. Energy impacts of garbage eliminated. Impacts of man's use reduced. Artificial energy source introduced. Species competition locally disrupted. "Food" species artificially reduced.	Increased management activity requested by NPS. May assume more responsibility for preservation of grizzly. May cooperate with NPS and other agencies in bear management. If bears are concentrated in park, need for outside management may be reduced.	Activities restricted in some areas. Expense and trouble of garbage control. Less need for restrictions on bears concentrated in park.
B. Continue Existing Program (No Action)	Rely on natural foods only. Habitat protection optional. Likely more problem individual bears than Alt. A. Illegal kills outside the park may remain at some levels. No artificial concentrations. Social habits remain natural. Local population size may remain stable or decline. Loss dependence on man. Other impacts similar to Alt. A.	Some areas may be closed to entry. Fewer restrictions than Alt. A Visitors would not see bears in selected areas. A truer picture of grizzly ecology seen. No restricted areas of travel due to feeding. Other impacts similar to Alt. A.	Cooperative efforts with outside agencies required. No need to provide areas and carcasses for feeding. No need to arrange travel routes and campsites due to feeding. No spinoff to campgrounds. Other impacts similar to Alt. A.	No artificial energy source. Species competion remains natural. "Food" species mortality remains natural. Other impacts similar to Alt. A.	Increased management activity may be required.	Similar to Alt. A, except that need for restrictions would remain at existing level.
C. Further Restrictions on Visitors	Fewer conflicts with man. Less need for controls. Freer choice of habitat.	All impacts from alternative A, plus: Activity further restricted Enjoyment of park lessened restriction of freedom.	Public information output increases. More intensive patrols required. Fewer management actions.	Increased diversity and naturalness. Impact of man's use further reduced.	May be faced with increased recreation spinoff from park.	Recreational use might increase because of restrictions in park.

III. AFFECTED ENVIRONMENT

A. The Park's Natural Environment--A Brief Overview

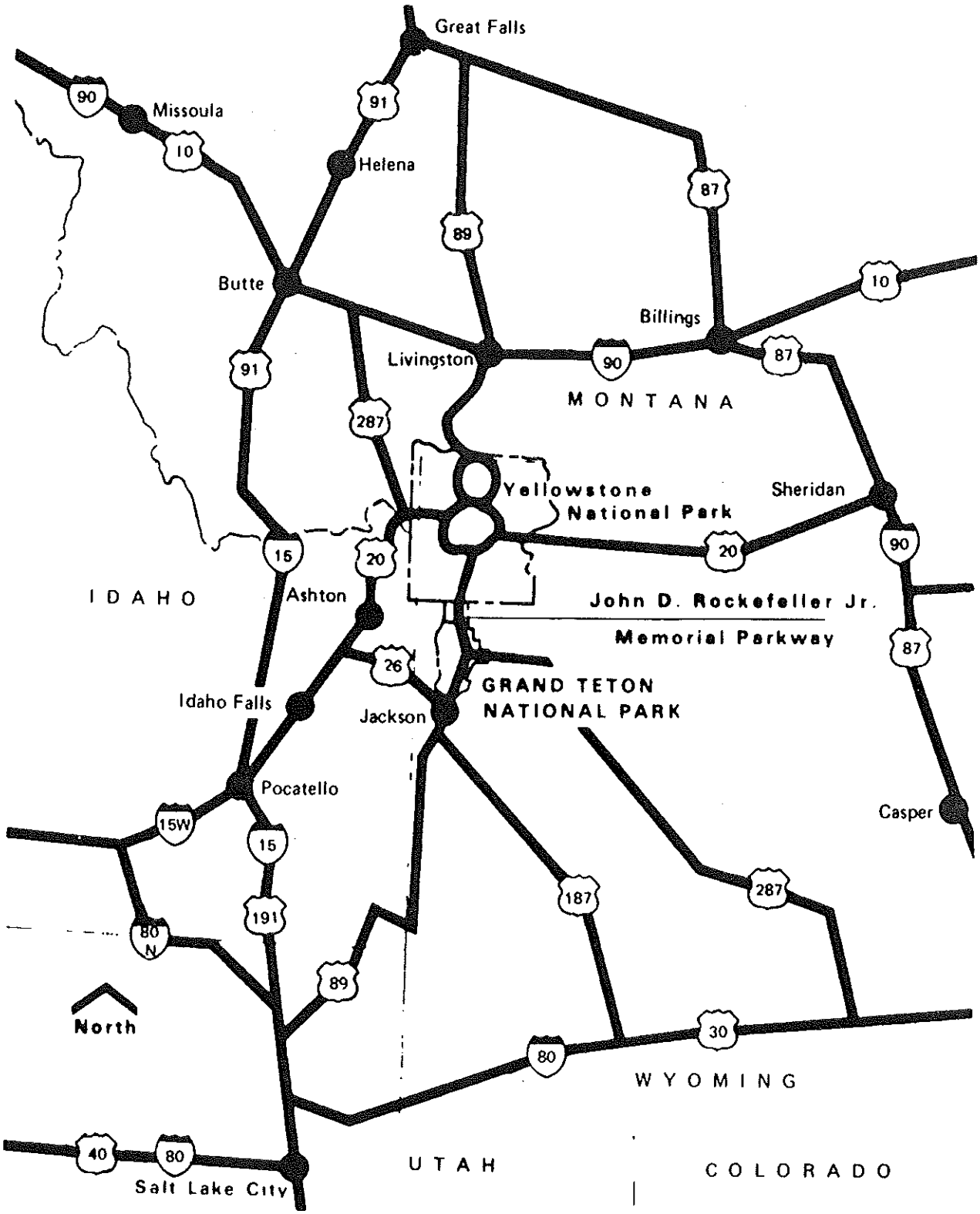
Yellowstone National Park (figure 3), in the establishment act of March 1, 1872 (17 Stat. 32), was "dedicated and set apart as a public park for pleasuring-ground for the benefit and enjoyment of the people" and "for the preservation, from injury or spoilation, of all timber, mineral deposits, natural curiosities, or wonders . . . and their retention in their natural condition."

Yellowstone National Park, located in the extreme northwestern corner of the state of Wyoming, occupies an area of approximately 3,500 square miles (9,000 km^2) and is the central portion of a vast mountain-encircled, upland plateau astride the Continental Divide. This entire wildland area covering approximately 7,000 square miles (20,000 km^2) in Wyoming, Idaho, and Montana includes Yellowstone and Grand Teton National Parks, and portions of five adjoining national forests. Elevations in the Yellowstone area range from 5,000 feet (1,525 m) at Gardiner, Montana to over 11,000 feet for the highest peaks. Yellowstone National Park is characterized by several broad, forested volcanic plateaus ranging in elevation from 7,000 to 9,000 feet (2,140 to 2,750 m). These volcanic plateaus are bounded by mountains on all sides; the Absaroka Range on the east; Teton Range on the southwest; the Gallatin Range on the northeast and north; and the Snowy Range to the north outside the park boundary. The park is well known for its many thermal features that have developed in topographically low areas or along major fault systems.

The climate of Yellowstone National Park is characterized by long, cold winters, short cool summers, and a resultant short growing season. Frost occurs most nights at higher elevations; at lower elevations nights are always cool. Park weather records show that the average temperatures during the month of July is 62.8°F, during January, 18°F. The mean annual temperature at Mammoth (the warmest section) is 39.8°F. Summer temperatures generally range from 55°F (13°C) at night into the 70s F (22°C to 26°C) in the daytime. Freezing temperatures have been recorded at all park weather stations during all months of the year. Precipitation averages 25 inches (635 mm) per year, mostly in the form of snow. Snowfall varies with elevation in the park. Areas along the Continental Divide and in the Absaroka Range along the eastern boundary receive 200 to 400 inches (5,075 to 10,250 mm) annually, while the Mammoth area at 6,000 feet (1,830 m) elevation receives only about 90 inches (2,290 mm) annually. Lightning-caused fires are occasional and normal.

Much of the park is forested. Spruce-fir and lodgepole pine forest types predominate, followed by a smaller Douglas-fir forest. Nonforest vegetation is widely interspersed throughout the forest areas. Extensive grassland and sagebrush areas on high slopes and ridges as well as mesic meadows scattered throughout the forests on moist sites along streams and around ponds predominate in the nonforest vegetation (Despain, D.G. Major Vegetation Zones of Yellowstone National Park, Information Paper No. 19, 1973).

FIGURE 3 THE REGION



REGIONAL MAP

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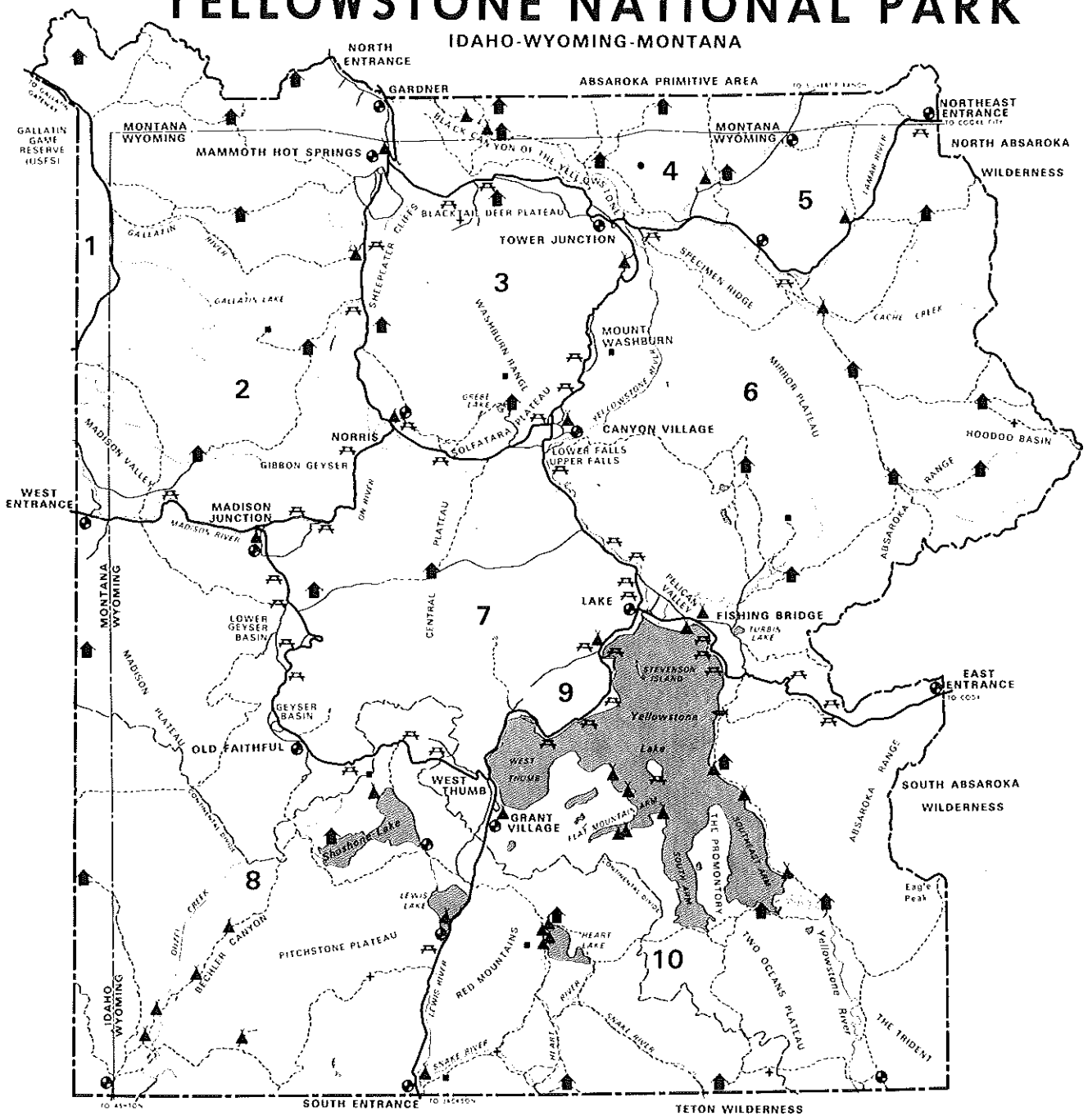
YELLOWSTONE NATIONAL PARK

IDAHO-WYOMING-MONTANA



LEGEND

- PARK BOUNDARY
- MAJOR ROAD
- MINOR ROAD
- TRAIL
- PATROL CABIN
- RANGER STATION
- CAMPGROUND
- PICNIC AREA
- LOOKOUT TOWER
- SNOW COURSE OR GAUGE
- FISH TRAP
- MICROWAVE REFLECTOR

N

SCALE 1 0 1 2 3 4 MILES

FIGURE 4

MAJOR LOCATIONS

IN YELLOWSTONE NATIONAL PARK

On the upper plateau levels and mountain slopes, subalpine meadows are found. To a limited extent, areas above about 10,000 feet support an alpine tundra.

These nonforest lands include the large, open valleys of Lamar, Pelican, Hayden, and Firehole. Dense sedge growth borders the streams and extends across the flat bottoms. Slightly higher slopes support bunchgrasses, forbs, and sagebrush, with scattered marshy swale areas. Seasonally, these valleys and their vegetation are a major feature of the grizzly bear habitat.

The highly varied vegetation mosaic supports a wide variety of plant-eating animals. Among them are an array of large ungulates--bison, mule deer, moose, pronghorn antelope, elk, and bighorn sheep. The rodent population includes pocket gophers, mice, marmots, squirrels, muskrat, and beaver. These plant eaters support a second level complex of meat eaters such as the coyotes, fox, bobcat, occasional wolves, mountain lion, black bear, and grizzly bear. Fish, both natural and introduced, are an important component of the fauna. A wide variety of birdlife can be found, including Canada goose, trumpeter swan, white pelican, osprey, sandhill cranes, great blue herons, and kingfishers, many of which are dependent upon fish for a major portion of their diet.

In addition to the large and visible animals so important to the visitor's experience, there exists a great diversity of lesser forms that interact to form the complex food web of which the grizzly bear is a part.

B. Park Development

The majority of development is concentrated in ten locations in three areas of the park (figure 4).

1. Northern Area: Mammoth-Norris-Tower

Mammoth is the site of park headquarters and is a year-round residential and tourist center. Overnight accommodations include a hotel, a lodge, tourist cabins, and a campground. The Norris and Tower areas have only campground facilities and a small employee housing area. (Visitor capacity, 2,140; resident capacity, 979.)

2. Western Area: Madison-Old Faithful

The Madison area has an overnight population capacity of 1,276 persons, 1,230 visitors, and 46 residents. The Old Faithful area, substantially larger in terms of overnight accommodations, has a capacity of 3,970 visitors and 770 residents (total 4,740). Visitor facilities include an inn, lodge, and cabins at Old Faithful, and a campground at Madison.

3. Southeastern Area: Bridge Bay-Fishing Bridge-Lake-Canyon-Grant/West Thumb

More than 2,500 persons are residents (2,000 in the residential developments at Canyon and Grant Village) and 15,850 visitors in overnight campgrounds, cabins, lodges, and trailers. The lodges are located at Canyon and Grant Village.

During the summer visitor peak, accommodations are usually near or at capacity. Winter use is increasing steadily. Present

overnight capacities are expected to continue in the future so that in-park community populations should remain at present levels. Gateway towns, however, (West Yellowstone, Gardiner, Cooke City) may well continue to grow, given adequate tourist demand.

Backcountry trails and campsites are scattered throughout the park. Overnight camping and hiking are relatively more intensive in 21 areas that are distributed rather uniformly throughout the park. Collectively, these areas contain 366 backcountry campsites, receiving in 1981 approximately 50,000 nights use during the season of peak visitor use.

Altogether, park developments, including roads, power and phone lines, etc., comprise less than three-tenths of one percent of the total park acreage.

C. Grizzly Bears

The following piece on the historical distribution of the grizzly bear is an excerpt from the National Academy of Sciences 1974 "Report of Committee on the Yellowstone Grizzlies."

> "The grizzly bear of North America, Ursus arctos horribilis Ord (Rausch, 1963) is conspecific with the brown bears, Ursus arctos ssp., of the Old World. In North America, grizzly bears formerly occurred from northern Alaska and Canada southward to northern Baja, California and Durango, Mexico (Hall and Kelson, 1959), and from the Pacific Coast eastward to at least Ontario, Ohio, and Kentucky (Peterson, 1965; Guidlay, 1968). The range of the grizzly bear as been shrinking for at least 10,000 years. Populations east of the Mississippi River disappeared in early post-glacial time, and by the 16th century grizzly bears were found only in western North America. Farther north, grizzlies may have inhabited the "barren-grounds" of the Ungava Peninsula in northern Labrador and Quebec, but the evidence is equivocal, and no specimens exist (Elton, 1954; Harper, 1961). In any case, the range of the "barren-ground" grizzly north and west of Hudson Bay shrank during the 19th century. Grizzlies also disappeared from the Great Plains during the last half of the 19th century and from the Pacific Coast states in the first several decades of the 20th (Allen, 1942). In the Rocky Mountains, grizzly numbers also declined during this period, but more slowly. In the 1930's, grizzlies may have persisted in small numbers in the mountains of Arizona, New Mexico, and possibly Utah, but if so, they disappeared in the next several decades (Bailey, 1931), as did populations in northern Colorado and most of Wyoming; the last grizzly was seen in northern Colorado in 1920 (R.J. Tully, unpublished data, 1970; mentioned in Armstrong, 1972, page 271).
>
> "By the 1950's grizzly bears survived in Alaska, Canada, and adjacent parts of Washington, Idaho, and Montana. In addition, small, isolated populations survived in three localities: (1) the mountains of Chihuahua, Mexico (especially the Sierra del

Nido); (2) the San Juan Mountains of southwestern Colorado; and (3) the Yellowstone Plateau region of Wyoming and adjacent Idaho and Montana (Cahalane, 1964). In 1957, the number of Sierra del Nido grizzlies was estimated to be between 10 and 30 (Leopold, 1967). By 1968, that population was probably extinct (Koford, 1969). However, another small population is reported to persist in the Sierra Madre (A.S. Leopold, personal communication, 1974). Status of southwestern Colorado grizzlies is less certain, but three were killed in the two decades preceding 1970 (R.J. Tully, unpublished data, 1970, as mentioned in Armstrong, 1972, p. 271), suggesting that a few individuals may survive in more remote parts of the San Juan Mountains (R.M. Hansen, personal communication, 1974). (See Appendix E, Response 58.)

"The only one of these three isolated populations that has maintained significant numbers is on the Yellowstone Plateau. The occupied area includes Yellowstone and Grand Teton National Parks and adjacent portions of the Gallatin, Shoshone, Teton and Targhee National Forests. The system is variously estimated to comprise 14,000 km^2 (Cole, 1974) as the "Yellowstone Ecosystem", about half (8,800 km^2) of which lies within the boundaries of Yellowstone National Park (Cole, 1974)."

D. Present Distribution of the Species

Continuing with the excerpt from the National Academy of Sciences Report (1974):

"The limits of the range of grizzly bears at the present time must be based primarily on records of specimens taken at known localities and, secondarily, on records of sightings that can be judged trustworthy. Records for the last decade that at least marginally meet these criteria are plotted on Figure 5. From this map it is apparent that the population in the Yellowstone Park region is rather closely confined to the Yellowstone Plateau and that there is a gap of about 100 km between the northeast corner of the Plateau region and the nearest population to the north, on the southeast edge of Montana's Bob Marshall Wilderness Area. The intervening area is interrupted by agricultural lowlands, which grizzlies are highly unlikely to cross. Nor are they likely to reestablish populations in the smaller mountain ranges within the gap, such as the Bridgers, Big Belts, Tobacco Roots, Highlands, or Garnets. To the west, an even greater gap exists in Idaho between grizzlies in the Centennial Mountains on the Montana-Idaho border just west of the park and the nearest populations to the north, in the Lincoln and Rogers Pass areas of the Helena National Forest and the Rattlesnake Mountains of the Lolo National Forest. Along the southern edge of the Plateau, in the Teton and adjacent ranges to the south, and in the Wind River Mountains to the southeast, the present status of grizzly bears is unclear. There are persistent reports of their occurrence, especially in the Wind River Mountains, but specimens are lacking."

The Recovery Plan (Figure 5) depicts the Yellowstone grizzly bear ecosystem (occupied territory).

The primary emphasis in the work of the Interagency Grizzly Bear Research Team has been in defining and evaluating grizzly bear population dynamics. Prerequisite to this information was the establishment of habitat parameters within the study area and determining the distribution of grizzlies within that habitat. Knight, et al (1982) states "The 1981 distribution of verified observations of unmarked grizzly bears . . . did not differ significantly from the composite distribution of sightings from 1980 through 1981" (Figure 6). Since 1973, regular aerial reconnaissance has been added to ground observations. Movements have been studied with radio telemetry beginning 1975. The core of the population is centered in Yellowstone National Park. Concentration areas may vary slightly between years and seasons.

E. Population Size and Density in the Region and Park

A predictable result of the dump controversy was a considerable difference in population estimates by the factions involved.

Craighead and Craighead (1971) estimated that grizzly bear density in the Yellowstone ecosystem was 1/75 km^2. Apparently the average count for 1959-66, 174 bears, was divided into an area of 12,950 km^2 which included the 8,800 km^2 park, plus a peripheral area. An adjacent corridor 16.1 km wide surrounding this area is mentioned but not included in the density calculation, perhaps because it was regarded as occupied only on a seasonal basis. Elsewhere in the same paper, they refer to a study area of 19,943 km, including the corridor.

On the other hand, Cole (1973, 1974) estimated a minimum of 250 grizzlies within the 8,800 km^2 park (1/35 km^2) and an additional 100 in the 5,200 km^2 peripheral area outside the park boundaries (1/52 km^2) for a total of 350 bears and an average density of 1/40 km^2.

Both Cole and the Craigheads estimated crude densities; their estimates differ both in bear numbers (174 vs 350) and, less significantly, in area occupied (12,950 vs 14,000 km^2).

Grizzly bears are distributed in varying densities (Figure 6). Knight, et al (1982) states "Movement data conclusively indicates that the existence of semi-autonomous population segments is unlikely and that the determination of population size will be difficult due to the average home range sizes of individual bears (Figure 8, for example). Population trend indices appear to be more meaningful and measurable than a number estimate. . . . Current data indicate the Yellowstone grizzly bear population is unstable or possibly declining." Knight, et al (1982) estimates 197 grizzly bears in the population. However, Knight, et al (1982) emphasizes "that this is a point estimate based on some small sample sizes and we are unable to assess its accuracy at this time." The 197 bears were estimated for 1981.

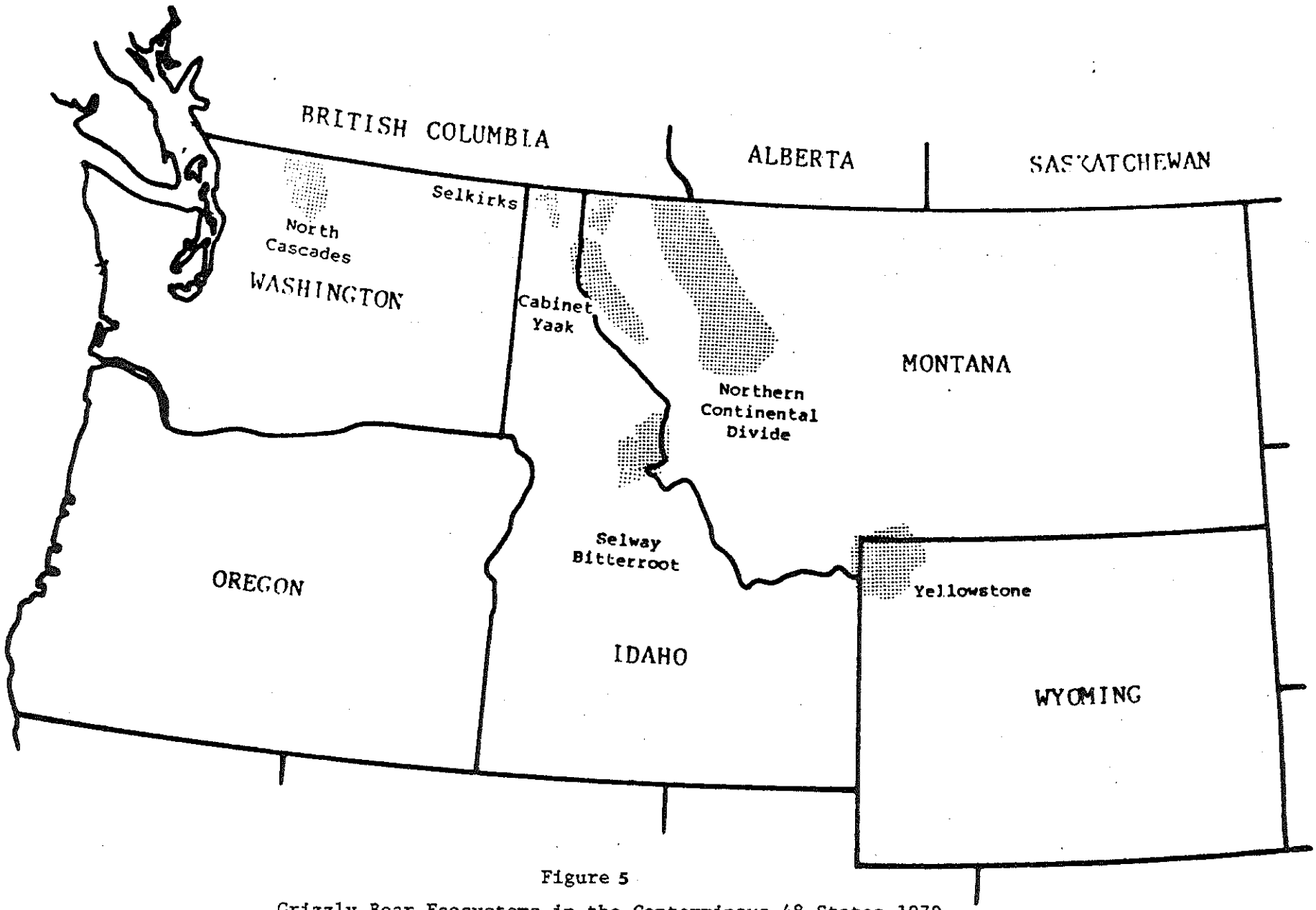


Figure 5

Grizzly Bear Ecosystems in the Conterminous 48 States 1979

Source: Grizzly Bear Recovery Plan, U.S. Fish and Wildlife Service, 1982.

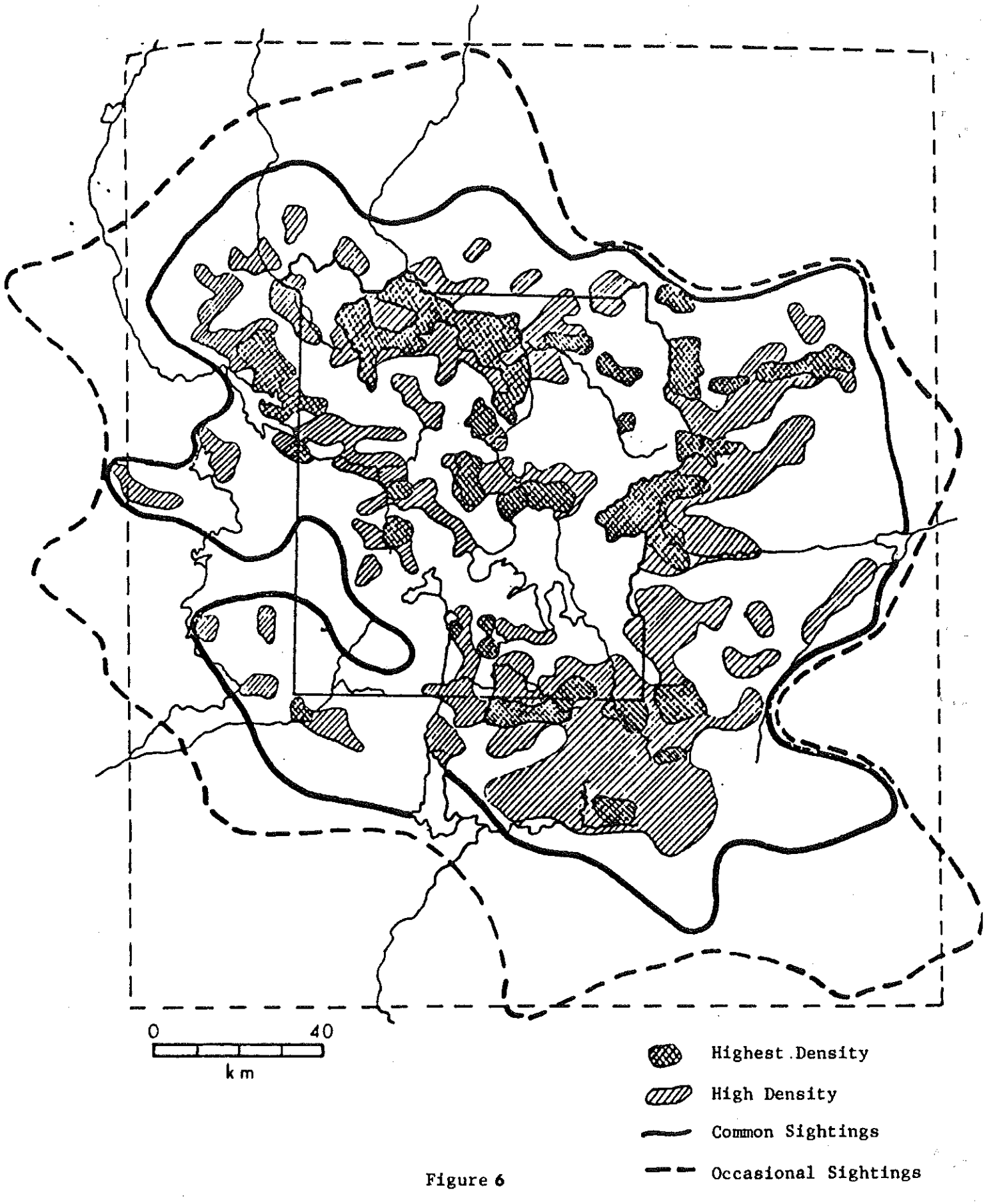


Figure 6

Distribution of sightings of unmarked grizzly bears, 1970-81.

Source: Knight, R. et al, 1982. Annual Report of the Interagency Study Team, 1981.

1. Management of Natural Habitat

Present management is oriented to maintaining the integrity of natural ecosystems. Artificial control of resources and natural processes are held to the absolute minimum required to offset known human impacts on those resources and/or processes.

Former programs to regulate large populations of elk and bison within the national park by live trapping and slaughter programs have been replaced by natural regulation (Cole 1971; Meagher 1973). In lieu of removing assumed surplus animals from the ecosystem, either for use in restocking other ranges or as food for man, those animals that die because of age, malnutrition, disease, or other natural factors are permitted to complete their full cycle without human interference. This concept is based on the premise that nothing in nature is either "good" or "evil" and the death of the individual is as natural and necessary an event as is birth.

Late winter and early spring is the period when the greatest number of elk and bison deaths occur in the wild. The time of "winter kill" overlaps with the emergence of grizzly bears from their winter dens when food items other than carrion is scarce. Bears and other scavengers seek out the carcasses of elk and bison--a source of protein and energy that may be essential to the survival of the species within Yellowstone.

The grizzly bear is resourceful and has the ability to use a wide variety of foods--roots, berries, and other vegetative materials in addition to carrion, small rodents, etc. Some predation by bears, mainly on elk, has been noted by biologists in Yellowstone (Cole 1972). The grizzly bear is capable of killing both adults and calves, most frequently in spring.

Yellowstone National Park has initiated a program to reestablish fire as a natural factor of the park ecosystems. Many years of fire suppression have somewhat modified the natural mosaic and species composition of vegetation, particularly on the northern range (Houston 1974). The effects of fire on the grizzly bear are not fully understood but, because the bear evolved in an environment in which fire was a normal and perhaps essential element, the assumption is made that restoration of a natural fire regime will not have an adverse impact on the bear population. The reverse is likely because of the grizzly's ability to utilize diverse habitats.

F. People

1. Visitation

Visitation passed the 2½ million mark in 1976, after remaining in the 2 to 2¼ million range for the previous eleven years (Table 3). The latter fact led many to believe that park visitation had leveled out, but a close look at the long-range record indicates that visitation here has always progressed irregularly but continually upwards. Early increases were tied more to improvements in facilities and to a growing awareness of the park. During the post war years of the late 40's and early 50's, increases in both population and leisure time sparked most of the travel, the sharp decline during the gas shortage of 1974

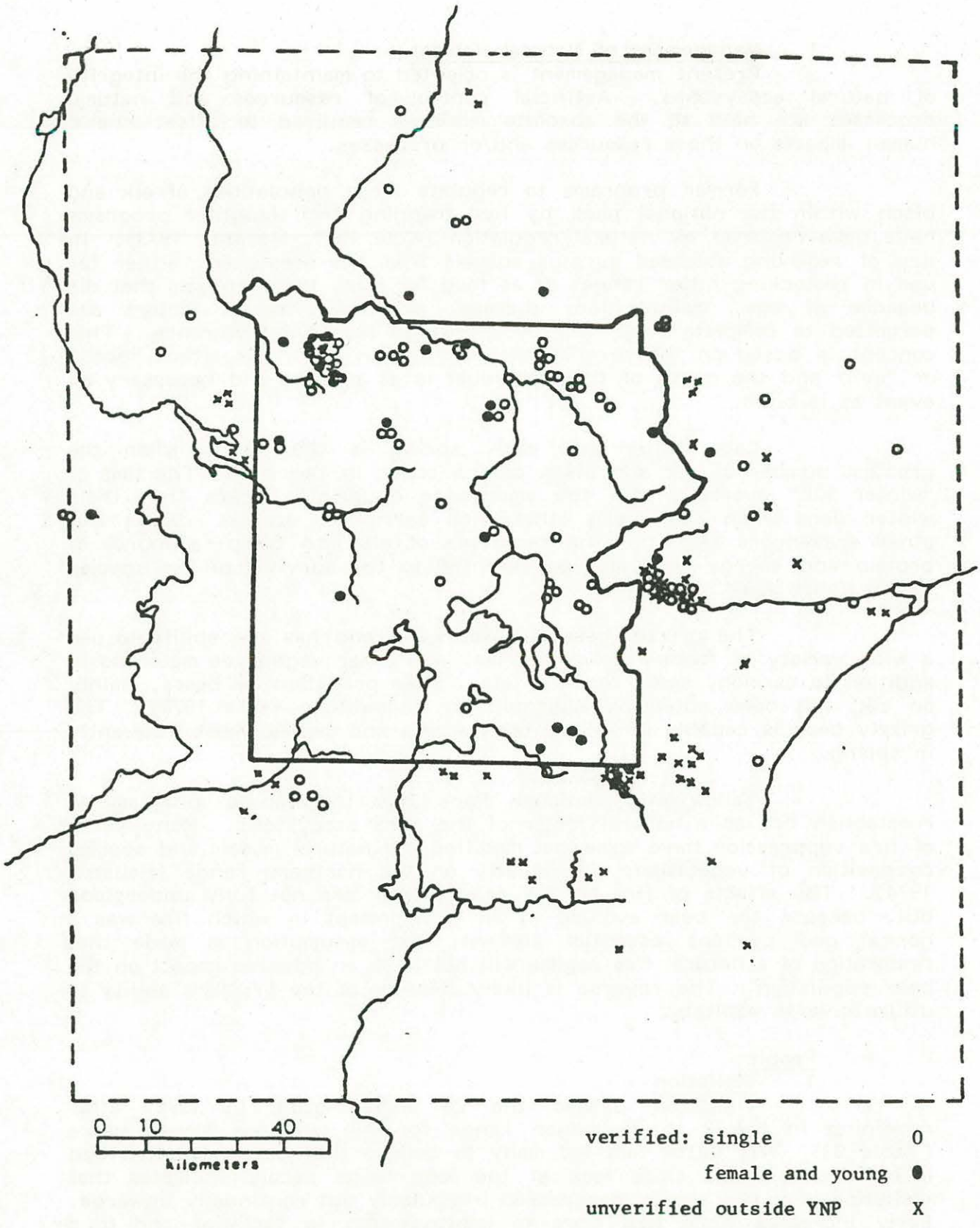


FIGURE 7

OBSERVATIONS OF UNMARKED GRIZZLY BEARS DURING 1981

SOURCE: Knight, R. et al, 1982. Annual Report of the Interagency Study Team, 1981.

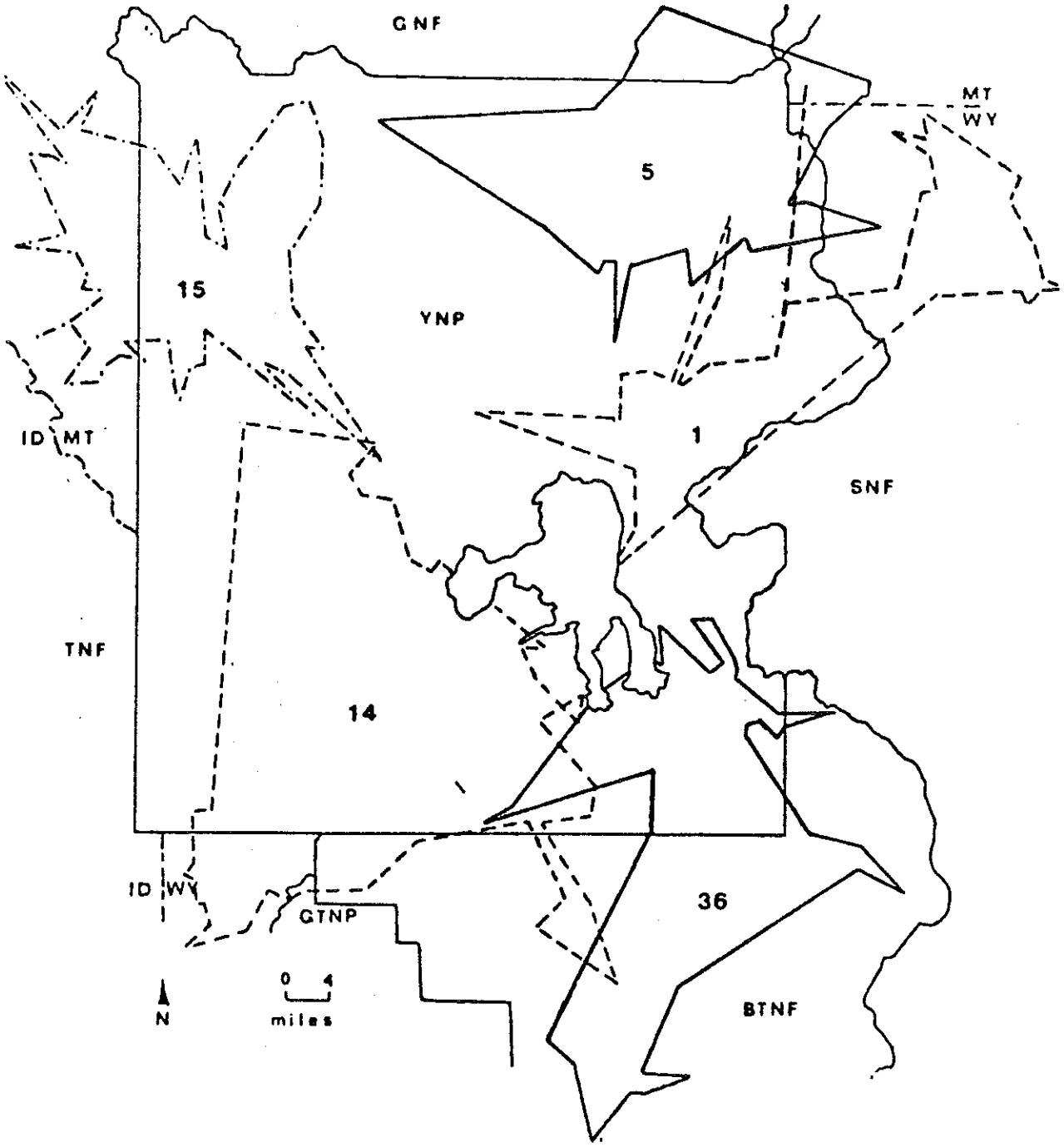


FIGURE 8

HOME RANGES OF FIVE ADULT MALE GRIZZLY BEARS

SOURCE: Knight, R. et al, 1982. Annual Report of the Interagency Study Team, 1981

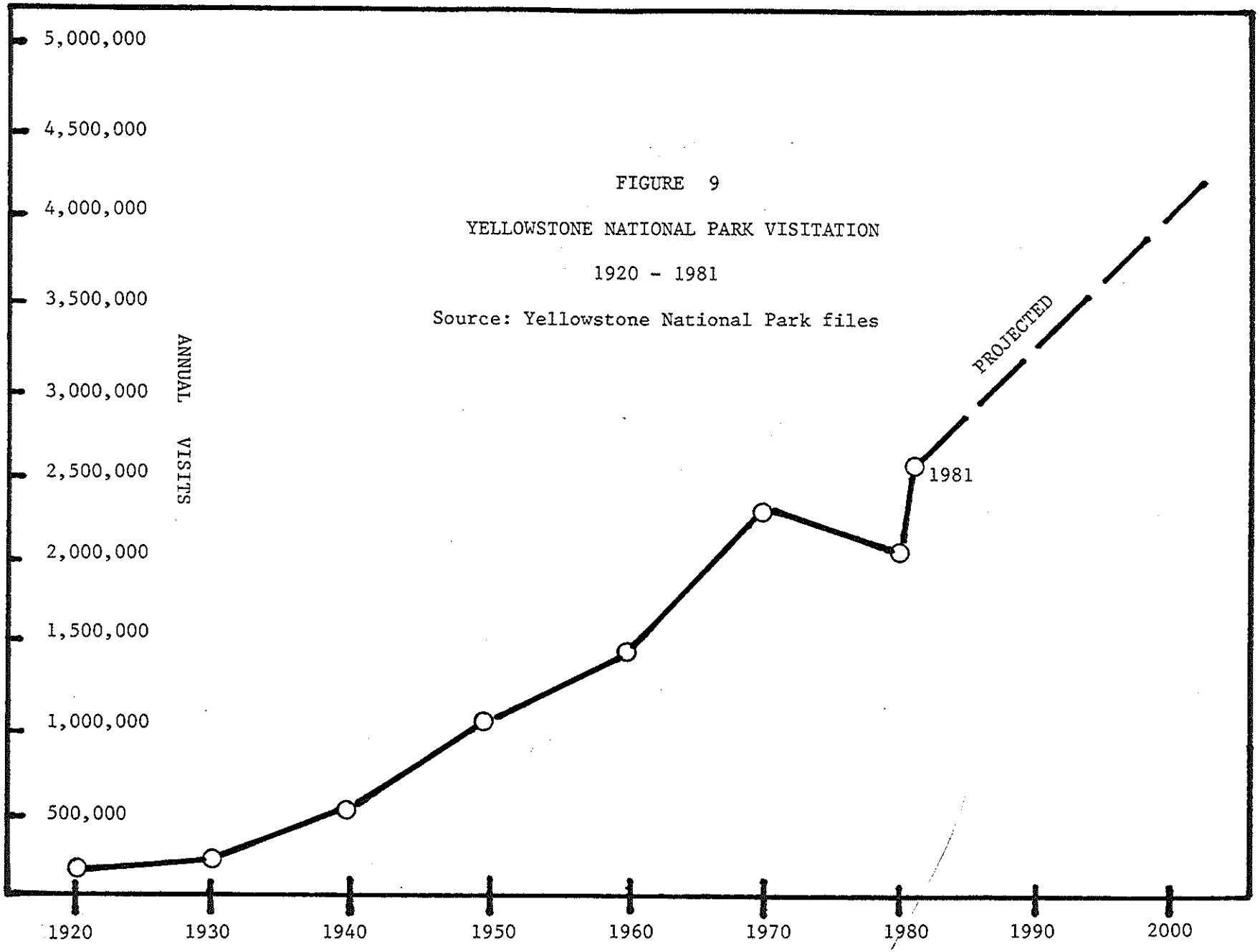


FIGURE 9

YELLOWSTONE NATIONAL PARK VISITATION

1920 - 1981

Source: Yellowstone National Park files

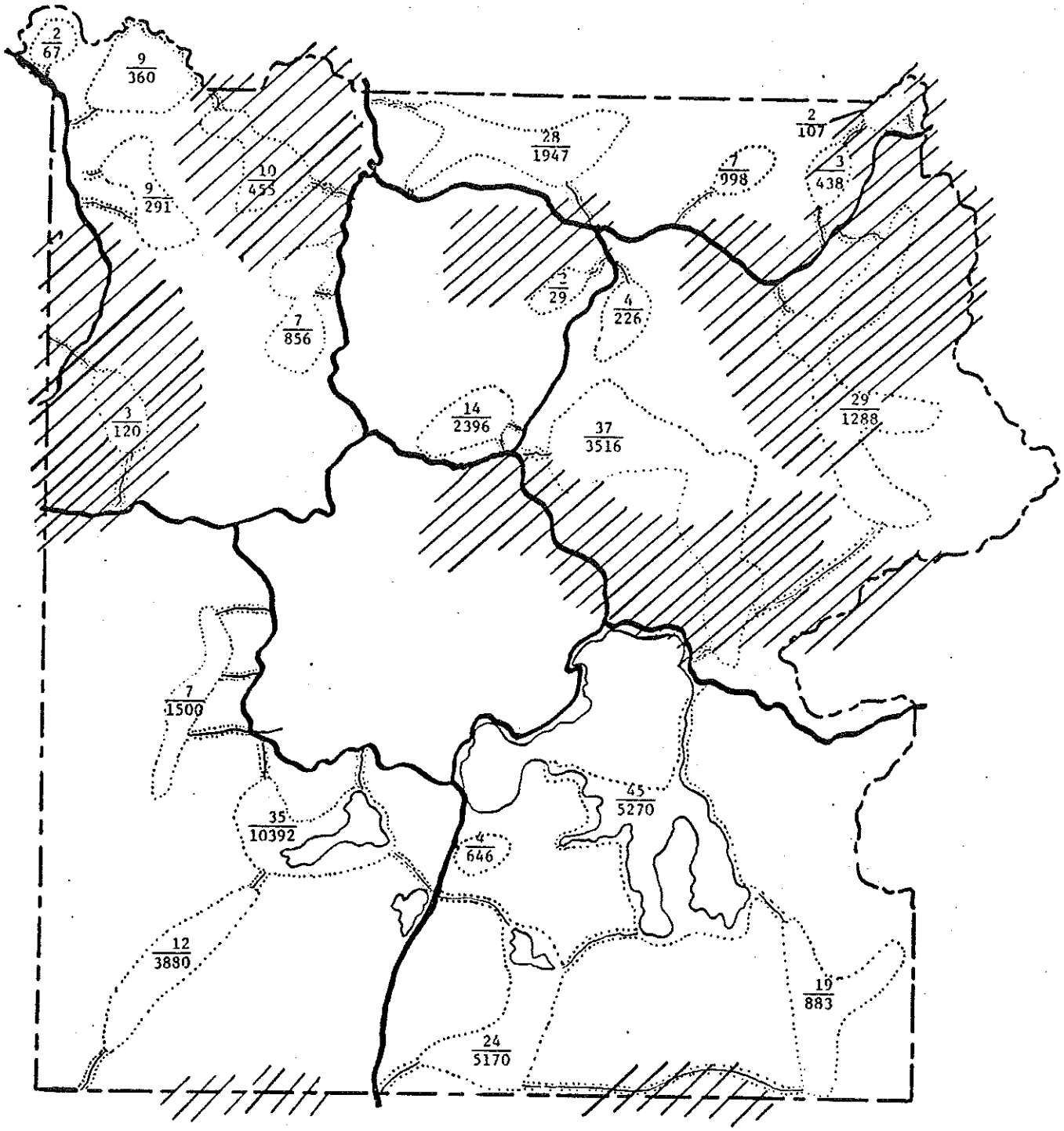


Figure 10 Backcountry Use and Grizzly Concentration Areas

Grizzly Concentrations

Main Travel Routes

No. of Sites / Nights Use

Backcountry Use Areas

Source: Yellowstone National Park files (untitled), 1975

indicates that fuel and/or available transportation as well as economic conditions may play a much greater role in the years to come. If travel opportunities remain open, however, visitation may continue to increase at the same rate. A graph based on 10-year intervals shows a relatively steady rate of climb. (See Figure 9.)

2. Overnight and Backcountry Use

The park contains overnight accommodations for 23,360 persons at any one time. Trends of use appear fairly constant, often determined more by campground closures, etc., than by public choice patterns. During the 10 years since 1978, backcountry use has averaged 10,072 annually. (See Table 4.) Backcountry use is most intensive in the areas indicated in Figure 10.

3. Attitudes towards bears

Man's relationship with grizzly bears has received much attention. Recent studies of the evolution of man's attitude toward wildlife suggest that evolution is similar in many areas of the world. (Tocher et al. 1973; Shaw 1974). Historically, as wildlife populations decreased and human populations increased, man's relationship to wildlife went through the stages characterized by utilitarian and consumptive motivations, fear and challenge, and finally aesthetic appreciation which in many areas of the world is the present day attitude.

Wildlife concerns today can be compared with contemporary social movements involving the liberation of a human social type; that is, the liberation of non-human species through a growing respect for and appreciation of life in its many diverse forms.

Western man's contemporary pursuit of the wilderness exemplifies present-day attitudes toward bears.

> "My impression of this relationship is that the grizzly has had, and still does have the ability to uniquely stimulate the imagination and mind of man, and that human beings, in visiting grizzly country, face a situation which induces qualities phylogenetically developed in man, but which are often not allowed simple expression (socially and legally acceptable author's note) in our modern and complex technological society." (Herrero 1970.)

In sum, therefore, from primitive times to the present, man's relationship with the grizzly bear has been significant and of great depth, changing in content but not in dimension through different cultures and times. Johnson (1973) sketched a brief history of park visitors and grizzlies which denotes the basic predicament of public popularity:

> "Yellowstone Park soon became famous for its bears, both black and grizzly, and remains so to this day. Bears became synonymous with Yellowstone and were the main attraction of the park for many people. Visibility of the bears came to be accepted as desirable, even necessary to the continued growth and prosperity of the park."

Table 2. Yellowstone National Park Vistation 1895-1981

The number of visitors during the period between the establishment of the park (1872) and the beginning of this compilation (1895) was estimated to be not less than 1,000 nor more than 5,000 each year.

Year		Year		Year	
1895	5,438	1930	227,901	1960	1,443,288
1896	4,659	1931	221,248	1961	1,524,088
1897	10,680	1932	157,624	1962	1,925,227
1898	6,534	1933	161,938	1963	1,872,417
1899	9,579	1934	260,775	1964	1,929,316
		1935	317,998	1965	2,062,475
1900	8,928	1936	432,570	1966	2,130,313
1901	10,769	1937	499,242	1967	2,210,023
1902	13,433	1938	466,185	1968	2,229,657
1903	13,165	1939	486,936	1969	2,193,894
1904	13,727				
1905	26,188	1940	526,437	1970	2,297,290
1906	17,182	1941	581,761	1971	2,120,487
1907	16,414	1942	191,830	1972	2,246,827
1908	18,748	1943	64,144	1973	2,061,537
1909	32,545	1944	85,347	1974	1,937,768
		1945	178,296	1975	2,246,132
1910	19,575	1946	814,907	1976	2,525,174
1911	23,054	1947	932,503	1977	2,487,084
1912	22,970	1948	1,013,531	1978	2,623,141
1913	24,929	1949	1,133,516	1979	1,874,539
1914	20,250				
1915	51,895	1950	1,109,926	1980	2,018,848
1916	35,849	1951	1,166,346	1981	2,549,307
1917	35,400	1952	1,350,295*		
1918	21,275	1953	1,326,858		
1919	62,261	1954	1,328,893		
		1955	1,368,515		
1920	79,777	1956	1,457,782		
1921	81,651	1957	1,595,875		
1922	98,225	1958	1,442,428		
1923	138,352	1959	1,408,667		
1924	144,158				
1925	154,282				
1926	187,807				
1927	200,825				
1928	230,984				
1929	260,697				

*Beginning in 1952 the figures represent travel during the calendar year instead of the period October 1 to September 30 as previously used.
Source: Yellowstone National Park Files.

Table 3. Rates of Change
Yellowstone National Park Visitation 1929-1980

(Rounded to nearest whole number)

	Difference in vis.	% Change
1920-1930	+ 148,124	+ 185%
1930-1940	+ 298,536	+ 130%
1940-1950	+ 583,489	+ 110%
1950-1960	+ 333,362	+ 30%
1960-1970	+ 854,002	+ 59%
1970-1980	- 278,442	- 12%

SOURCE: Yellowstone National Park Files

Table 4
Yellowstone National Park Visitation Overnight Use 1970-1981

	Campgrounds[a]		Backcountry		Concessioner Overnight	Total
	Tents	RV/Trailers	Campers	Misc.[b]	Stays[e]	Overnight
1970	263,023	418,391	C	10,653[d]	608,320	1,300,387
1971	238,856	525,430	21,790	14,375	545,185	1,345,636
1972	259,883	565,475	24,946	8,811	605,506	1,464,621
1973	153,159	322,910	36,808	7,267	621,100	1,141,244
1974	245,628	404,034	41,624	9,855	612,073	1,313,214
1975	235,368	341,426	44,387	9,620	661,767	1,292,568
1976	297,189	471,956	42,212	11,261	684,067	1,506,685
1977	322,328	453,791	53,643	10,978	631,832	1,472,572
1978	236,676	497,103	52,686	7,665	691,997	1,486,127
1979	219,297	358,266	46,142	10,199	640,517	1,274,421
1980	198,216	317,349	24,010	10,122	670,259	1,219,946
1981	244,894	391,437	55,060	12,583	681,614	1,385,588

a - Includes formal campgrounds and reported "undesignated", "Type B" or "overflow" camping.
b - Includes group camps, overnights aboard boats, and other overnights.
c - Backcountry camping was not separately identified in 1970 park reports.
d - Reported as "Other Overnight" in 1970. May have included back country.
e - Includes concessioner-operated rooms, cabins, and campgrounds

SOURCE: Yellowstone Park files, and National Park Statistical Abstracts, 1972-81

The attitudes of travelers to the Yellowstone region were solicited through a 1970 study by the National Advertising Company. "What would you say was the most enjoyable place you visited on this trip? Why?" was a major question asked of these auto travelers. Several response types are illuminating, for example: "Seeing wildlife in their natural habitat. There are so many places you can see natural wildlife." " . . . Also, seeing bears, deer, rabbits, etc., in their natural environment." When asked: "What would you say was the least enjoyable place that you visited, or the least enjoyable thing that you did while on this trip? Why?: Vacationers responded: "Yellowstone National Park. All the bears and other wildlife were gone." Nearly all such comments refer to opportunities to see black bears, which, until a few years ago, were commonly seen on roadsides. Grizzly bears have rarely been seen at any time waiting for handouts at park roadsides.

Regardless of the particular species involved, wildlife is important to the viewing public. Grizzly bears are aesthetically important to the visiting public although they are seen infrequently.

A survey in 1979 by the U.S. Fish and Wildlife Service and Yale University found that generally the public prefers non-lethal solutions to bear/human encounter problems. These solutions included bear relocation efforts "and restrictions on human access to areas where bears are likely to be."

In a questionnaire survey conducted 1969-70 in Alberta, Canada, the objective was "to determine the degree to which wildlife in western mountain national parks is perceived as being hazardous and factors associated with the perceptions . . ." (Bryan and Jansson 1973). The implicit assumption was the perception of wildlife as a hazard affects behavior toward wildlife. The data suggested that more contact (by frequency of national park visits, size and location of residential community, hunter; non-hunter status) instilled a lesser perception of hazard.

One interpretation of such results (although not that of the researcher) is that as human populations become more distant, experientially and proximally, from wildlife, (urbanized, etc.) and contact lessens, perception of hazard will increase hopefully followed by more cautious behavior when hazardous species are in the vicinity.

G. Bear-People Interactions

1. Nature of interactions

a. Passive-viewing bears

Many visitors come to Yellowstone National Park primarily to see and enjoy its diverse native wildlife, including the grizzly bear. Most of the bears seen in the park are the more common black bears, which were at one time responsible for major traffic jams as visitors stopped to observe or photograph bears that were visible from the roadway. Since the more rigid enforcement of feeding regulations began, it is much more difficult to see black bears.

Opportunities to see grizzlies have never been common. At certain seasons and in particular areas, opportunities do

exist for visitors in cars to view wild grizzlies safely as the bears travel and forage naturally. Such opportunities cannot be guaranteed.

Sightings may be made in many places in the park, but are not frequent in the areas indicated on Figure 5. In areas where grizzly bears are known to occur, sightings are possible at any time the bears are active.

b. Active

Active interactions occur when visitors intentionally or unintentionally attract bears, or when visitors encounter a bear that illustrates aggressive behavior, often in defense of cubs or to protect a food supply. A small percentage of these interactions result in injury to the visitor. Such injuries often are due to the visitors lack of awareness of the potentially dangerous nature of these powerful animals. Carelessness, often inadvertent, may subject the visitor to increased risk of serious injury.

Active interactions may occur anywhere there are both grizzly bears and visitors.

Bears in campgrounds are always potentially dangerous, and established campgrounds in areas that may be frequented by grizzly bears during spring and early summer sometimes are opened late to reduce the likelihood of personal injury. Permanent closure of only one campground--the Pelican Creek campground--has been required because of unusually high grizzly bear density.

Restrictions on the types of camping equipment may also be applied. Canyon and Fishing Bridge campgrounds are located in areas of high grizzly bear density and prior to 1969 were both considered to have critical grizzly bear problems. In 1970, camping in the Canyon Campground was limited to hardsided recreation vehicles. The use of tents, tent trailers, and bedrolls on the ground is prohibited. This same restriction was applied to the Fishing Bridge Campground beginning in 1977.

There is evidence to suggest that with the increased standards of campground sanitation and food storage in effect, bears are avoiding developed area campgrounds (Table 5). For example, in 1981, it was necessary to capture and relocate eight grizzly bears and two black bear from developed areas. This is in contrast with the necessity to destroy four and relocate ten grizzly bear and eleven black bear from the Canyon Campground in 1969.

Hiking and backcountry camping are becoming increasingly popular activities within Yellowstone. Many of the backcountry campsites are within areas of relatively high bear densities and/or can be reached only by traveling through prime grizzly bear habitat. (See Figures 6 and 7.) To date, personal injuries attributed to grizzly bears in the backcountry have been rare. The potential danger, however, is there. In order to minimize the potential of human-bear conflicts, backcountry activities and facilities (trails and campsites) must be closely regulated and monitored. Trails and backcountry campsites are

closed when the area is known to contain a bear that is considered to be a special hazard, such as bear that has demonstrated an aggressive behavior pattern.

More frequent grizzly/human conflicts in the Gallatin Range have resulted in restricting travelers in that area to horseback or to parties of four or more people. Relatively short walks into the backcountry normally do not expose the visitor to the same degree of danger as the backpacker. Hiking is a day-use activity and takes place during the period when bears are least active, often in fairly open country with good visibility adjacent to main park roads. Walks, however, are often spontaneous events in which the participants are relatively unprepared, in terms of equipment, background, and attitude, to avoid conflicts with bears. Portions of the interpretive program and monitoring program are directed toward making hiking a safe activity.

Fishing is either a primary purpose of or an incidental activity in the majority of backcountry visits. Backcountry fishing may expose the visitor to risk of bear-induced injury, especially in areas where discarded fish carcasses serve as bear attractants. Fish cleaning and cooking also have to potential to attract bears. Therefore, fishing areas must be monitored very closely to prevent the development of backcountry nuisance bears. Backcountry fishermen are now instructed to dispose of fish entrails in the water in which the fish were caught.

To date, no fishing areas have been closed specifically to prevent possible bear-visitor interactions. However, in 1973, the National Park Service closed the first mile of the Yellowstone River--including the popular Fishing Bridge area--to fishing. The action was taken in response to the concern of the U.S. Fish and Wildlife Service that continued fishing pressure would adversely affect the outlet-spawning cutthroat trout, causing high cutthroat mortality and excessive competition from the fry of suckers and shiners (Dean 1972). Fishing Bridge is in an area of documented high density of grizzly bears (see Figure 6). Closure of the area to fishing undoubtedly reduced the number of discarded fish carcasses along the river, thereby reducing the area's attractiveness to grizzly bears. The likelihood of bear-visitor interactions in this area possibly is less than before the closure. In 1977, Pelican Creek was restricted to catch-and-release fishing primarily to reduce the number of fishermen and lessen the chance for contacts with grizzlies.

The black bear is less often seen, probably more adaptable to man or tolerant of man, and during the days of roadside feeding, was more responsible for injuries than the grizzly. Indeed, the majority of all bear injuries to park visitors have been attributed to the black bear (Table 6). During the period 1931-69 an average of 47 people per year were injured by all bears. The highest recorded number of injuries occurred in 1937 when 115 people were injured. The lowest number of injuries prior to 1978 were recorded during the period 1943-45 when visitation was greatly reduced. An average of 26 bears per year (including an average of 3 grizzly bears) during the period 1931-69 were killed as the result of a nuisance bear control program (Table 7). Table 7 indicates that far fewer bears have been killed since 1969.

Table 5. Grizzly Bear Control Actions in Developed Areas,[a] Yellowstone National Park, 1970-81 (from park files)

Developed areas:	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Old Faithful	22	1	0	0	1	0	3	3	1	1	0	0
Canyon	9	11	10	3	6	0	0	1	0	0	2	1
Lake Outlet	11	20	13	4	5	0	11	3	0	0	0	5
Grant Village	15	5	0	0	0	0	0	0	0	0	0	0
Bridge Bay	0	1	3	3	2	0	0	2	1	0	0	0
Eleven other units	13	1	0	0	0	0	1	0	0	0	2	2
Total control actions	70	39	26	10	14	0	15	9	2	1	4	8
No. different bears[b]	50	33	21	7	11	0	9	7	0	1	13	8
Pct. successful transplants	60	80	74	70	77	0	36	78	0	100	50	100
No. bears destroyed[c]	12(6)	6(2)	6(4)	0	2(1)	0	1	1(1)	2	1(1)	1	0
No. bears to zoos	8	0	1	0	0	0	0	0	0	0	0	0

[a]Number of times a bear was captured for transplanting, shipped to a zoo, or destroyed.

[b]4 of 33 were 1970 transplants, 4 of 21 were 1970 or 1971 transplants.

[c]Yearly totals with the number that were unintentional because bears charged personnel, came out of drugs during handling, injured themselves in traps, or failed to recover from drugs shown in parentheses.

Previous estimates suggest that approximately 500-650 black bears live within the park (Cole 1976). Further study is needed to determine the present population status. Historically, large numbers of the population were associated with park roadsides and developed areas. As a corollary to the grizzly bear management program, the absence of garbage and increased enforcement of regulations prohibiting bear feeding has resulted in the black bear's return to the forest.

Following closure of the dumps, the number of personal injuries attributable to both black and grizzly bears declined markedly (Tables 6 and 7) during a period when total park visitation remained roughly constant. The number of bears killed for control was positively correlated with the number of injuries during the period. Both black bears and grizzlies have been less often killed for control purposes since the dumps were closed and high protection standards enforced (Table 7).

H. Probable Future Environment Without the Proposed Action

The primary emphasis of the proposed action is in the regulation of human activities and solid waste management. Failure to continue these measures could lead to significant environmental changes through pollution and could increase the potential for people-bear conflicts. The latter could result in personal injuries, deaths and property damages, accompanied by an increased restriction of individual bears, and the possible loss of the grizzly bear from the Yellowstone ecosystem. The integrity of the natural environments would be weakened, and the value of the national park for visitor enjoyment and scientific study would be altered.

Table 6. Personal Injuries Attributed to Black Bears and Grizzly Bears, 1963-81.

Year	Number of Personal Injuries	Attributed to: Grizzly Bears	Black Bears	Unknown
1963	36			
1964	30			
1965	39			
1966	66			
1967	61	(3)	(58)	
1968	20	(2)	(18)	
1969	29	(6)	(23)	
1970	11	(3)	(6)	(2)
1971	9		(9)	
1972	8	(3)*	(5)	
1973	5		(5)	
1974	7		(7)	
1975	3	(2)	(1)	
1976	8	(4)	(4)	
1977	3	(1)	(2)	
1978	2		(1)	(1)
1979	3	(2)		(1)
1980	1	(1)		
1981	4	(2)	(1)	(1)

* One was fatal
SOURCE: Yellowstone National Park Files.

For the 1980 season, the injury rate was the lowest it has been since the low-travel years of World War II.

Table 7. Bear Incidents, Yellowstone National Park, 1931-1981.

Year	Personal Injuries (all bears)	Property Damage (all bears)	Damage Amount	Total No. Bears Killed for Control (all bears)	No. of Grizzlies Killed[a] (for control)	Park Visitation
1931	78	209	--	34	--	221,248
1932	34	451	--	55	--	157,624
1933	22	146	--	22	--	161,938
1934	25	38	--	2	--	260,775
1935	36	141	--	69	3	317,990
1936	42	34	--	14	4[b]	432,570
1937	115	81	--	51	10	499,242
1938	97	81	--	46	--	466,185
1939	78	92	--	23	--	486,936
1940	41	75	--	12	--	526,437
1941	90	102	--	26	--	581,761
1942	29	118	--	83	28	191,830
1943	5	38	--	14	--	64,144
1944	2	18	--	12	3	85,347
1945	2	7	--	2	--	178,296
1946	15	20	--	4	--	814,907
1947	40	9	--	8	--	932,503
1948	36	27	--	8	3	1,013,531
1949	47	26	--	19	8	1,133,516
1950	51	48	--	20	--	1,109,926
1951	38	75	--	44	4	1,166,346
1952	40	84	--	9	1	1,350,295
1953	43	66	--	11	1	1,326,858
1954	45	115	--	11	5	1,328,893
1955	73	121	--	23	5	1,368,515
1956	109	106	--	14	--	1,457,782
1957	91	125	--	21	1	1,595,875
1958	39	117	--	28	2	1,442,428
1959	41	269	--	30	6	1,408,667
1960	69	358	14,620	89	4	1,443,288
1961	58	247	13,138	59	1	1,524,088
1962	42	112	3,510	52	4	1,925,227
1963	36	278	10,810	21	2	1,872,417
1964	30	224	9,520	12	2	1,929,316
1965	39	290	8,239	11	2	2,062,475
1966	66	298	11,192	39	3	2,130,313
1967	61	195	6,769	20	4	2,210,023
1968	20	240	8,659	10	6	2,229,657
1969	28	207	5,269	42	10	2,193,894
1970	11	89	2,582	19	12	2,297,290
1971	9	71	2,832	8	6	2,120,487
1972	8	87	8,161	16	8	2,246,827
1973	4	38	8,206	3	0	2,061,537
1974	7	29	2,230	3	2	1,937,768
1975	3	27	513	0	0	2,246,132
1976	8	23	1,106	4	1	2,525,174
1977	3	31	2,201	4	0	2,487,084
1978	2	13	1,036	2	2	2,623,141
1979	2	7	317	0	0	1,874,539
1980	1	12	1,424	1	1	2,018,848
1981	4	18	790	0	0	2,549,307

[a]This number is included under "Bears Killed."
[b]Museum specimens.
SOURCE: Yellowstone Park files

IV. ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

A. Impacts - Proposed Action: Modify Existing Program

1. Impacts on Bears

The analysis of the impacts of modifying the existing grizzly bear management program is based on information collected during three periods in the park's history. The management data collected on the grizzly bears before closure of the dumps (1968) provide a baseline against which to evaluate the effects of the program. Similar data amassed during the period of dump closings (1968-1971) provide some indication of the immediate effects of that significant management decision on the population. Management data collected since the last park dump was closed in 1971 have substantial value in evaluating the impacts of modifying the existing management program (Cole, 1976; Meagher and Phillips, 1982).

From 1970 to 1973, "modeling done by the Craigheads and analysis completed by the National Academy of Science Committee provided population estimates that ranged between 254 and 306 grizzly bears for the greater Yellowstone ecosystem" (Waur, 1982).

The report of the National Academy of Sciences (Cowan 1974) indicates that the available data have "many shortcomings," owing in part to still incomplete analyses, inconsistencies in the methods of various investigators in collecting and analyzing data, variability in the skill of observers and resultant effects on the accuracy of observations, and differing emphasis in interpretation of data. However, the Academy was interpreting data assembled prior to the establishment of the Interagency Grizzly Bear Study Team, and since then a considerable amount of information has been gathered on a professional level. Some impacts are certain or nearly so, others probable, and still others only possible. Based on the Academy's findings, the work of the interagency team, annual management statistics, and other available information cited in Section II of this statement, the following conclusions may be made as best estimates of impacts on the future of the grizzly bear population.

The interagency study team concluded that the grizzly bear population is stable or possibly declining, based on cumulative data through 1981 (Knight, et al, 1982).

The park's grizzly bear population would continue to be an essentially wild population that is integrated into the natural food web. The only occasion for bears to have access to garbage would be through intentional or unintentional violation of existing regulations for solid waste management, visitor activities, or visitor behavior with respect to bears. This would not be expected to be any great amount.

Feeding by bears would be more diversified, and there would be less competition on a given food source at a given time and location, as compared to the former open dump sites. The bears would be affected by seasonal and year-to-year abundance of food, except that the population could be sustained by supplemental feeding at times of critical food shortages. Thus modification of the grizzly bear management program would not require the park's grizzly bears to rely exclusively on natural food sources in such emergency conditions.

There is no guarantee that all affected bears would be attracted to supplemental feeding stations. Moreover, Picton (1978) has claimed that past dump feeding did not enhance the population.

Elk or other animals would have to be sacrificed for a supplemental feeding program. Cropping of such animals to feed bears, however, cannot duplicate nature in timing, location or age and sex of animals. The segments of the elk population that are most readily available for this purpose are those segments along park roads that provide the best opportunities for visitors to see this large native ungulate. Judging from past experience, many people would be distressed by the slaughter of elk in Yellowstone.

Areas closed to public use for supplemental feeding would also likely be attractive to poachers and could require additional demands on manpower for security measures.

If the carcass-feeding program were carried out at a specific site over a period of several years, if emergency food conditions lasted that long, the site conditions could approach those formerly existing around the open-pit dumps. Care would have to be exercised by the park staff to avoid this. Otherwise, and perhaps even in spite of such care, a supplemental feeding program could contribute to an erosion of the grizzlies' wild traits and social behavior.

There was concern that rapid closure of the park's open-pit dumps with no supplemental feeding would result in a significant decline and probably rapid extirpation of the park's grizzly bear population (Craighead and Craighead, 1971). Table 7 shows that during the period of dump closures (1968-72), 42 grizzly problem bears were killed or removed from the population. However, such actions have become progressively less necessary and, from 1973 through 1981 only eight grizzlies have been removed from the population in park management operations (Table 5). Today, young bears do not learn to use people-introduced foods from either open-pit dumps or camping areas within the park. Habituation of bears to the natural environment has been largely responsible for the steady decrease in the incidence of control actions. One interpretation of available population data indicated that the population decline during and immediately following the dump closures was temporary and that replacement of losses occurred (Cole, 1976). Craighead (1974) using similar data predicted a rapid decline as a result of the closure of the dumps. Subsequently, Knight, et al (1982) indicates the population is unstable or possibly declining. The Interagency Grizzly Bear Steering Committee has concluded that "Unless some change occurs to reduce the grizzly's mortality rate soon, the probability of retaining this wildland species in Yellowstone National Park is minimal" (Waur, 1982).

Figure 9 and Table 2 indicate that the total visitation to Yellowstone National Park could increase from the 1981 figure of 2,549,307 to over 4,000,000 by the year 2000. However under the modified plan, that portion of visitors who venture into the backcountry would have more limited areas open to them (see Figure 1) and would be more strictly monitored. The conclusion is that the grizzly bear population would be

perpetuated if selected areas within and adjacent to Yellowstone were closed to human use and important food sources were protected, such as riparian and whitebark pine habitats and ungulate winter range.

Modification of the management program would have less adverse effect on the grizzly bear population in that fewer control actions could be anticipated. Much greater emphasis on education and enforcement to curtail human carelessness in permitting individual grizzly bears to become dependent on man's food would further the objective to reduce to zero the use of garbage and other introduced foods by bears. Closing areas to public use would also reduce unnatural food encounters by bears.

The modified grizzly bear management program should reduce the number of bears that become accustomed to man's food and thus become nuisances or dangerous. If fewer bears become nuisances, less of them would have to be handled, with resulting less trauma on the bears.

Nevertheless, certain bears may become nuisances and serious safety hazards from time to time. Such bears would be disposed of in a manner concurred in by the U.S. Fish and Wildlife Bear Recovery Coordinator. Such disposition could take several forms: (1) Relocation. Unfortunately, grizzly bears that have been corrupted by man's garbage may not be good risks in restocking programs. In effect, relocating such bears could be merely transferring the problem from one area and one jurisdiction to another. Grizzlies which cause stock depredations outside the park, however, and have no prior record of adaptation to garbage, may on a case-by-case basis by considered for relocaton within the park. (2) Donation to zoos. Zoos have requested grizzly bears from time to time. Wild bears, however, are much more difficult to maintain in captivity than zoo-reared bears. As there appears to be an abundant supply of the latter, it is questionable if many requests for Yellowstone grizzly bears will be forthcoming in the future. (3) Destroying the bear. Destruction of individual bears known to be extremely hazardous is often the only course of action available to prevent human injuries. The above discussion indicates that the number of control actions in the park has reduced greatly, from 42 bears killed during the 1968-72 period to only seven since 1973. The average since 1973 of less than one grizzly removed from the park per year could be lowered by having fewer control actions required by a modified program.

Data collected on the park's grizzly bear population since the dumps were closed indicate various changes in the population which may represent trends that will continue in the future.

"Grizzly bears have one of the lowest reproductive rates among terrestrial mammals . . ." (USDI-FWS, 1982, Grizzly Bear Recovery Plan).

Knight et al (1974) reported that cub: female ratios (i.e., litter size) in 1973 were lower than the 2.2 reported by Craighead and Craighead (1967) when the bears were using the open-pit dumps, and slightly lower than the 1.9 reported for 1972 by Cole (1973). Knight

indicated that the most likely explanation is relative increase in the proportion of younger females with only one cub. Alternatively, increased cub mortality might have been a causal factor. This increase might have been caused by the fact that during the period of relative intensive control actions, 1970-72, " . . . proportionally greater numbers of adult males were removed (from the population) than of either adult females or younger bears . . . " (Cole 1974). The former explanation appeared supported by the increased numbers of observations of females with cubs and the larger proportion of one-cub females at that time.

Since the 1974 report, Knight, et al (1982) has reported varying cub:female ratios. In 1981, the cumulative ratio was 1.9 and the unduplicated ratio was 1.7 (Table 8).

The 1981 survival rate of known females is estimated at 87%, while a 98% survival rate is needed to provide a sustained population increase (see Appendix D). With fertility rates so low and combined with low survival of females, the Interagency Grizzly Bear Team Steering Committee Chairman reports that "The presently available evidence indicates that the Yellowstone grizzly population most likely cannot sustain its present level unless female survival rates improve" (Waur, 1982).

A conclusion can be reached from the above impacts that a modified management plan for Yellowstone National Park itself, by providing for supplemental feeding during critical food shortages, protecting bears and bear habitat from human contact, and thus anticipating the need for fewer control actions, would contribute to the survival of the grizzly bear population.

Evidence persists that greater impacts on the grizzly bear population may take place outside Yellowstone National Park. Waur (1982) states that two principal causes of mortality of Yellowstones grizzly bears are illegal killing and habitat destruction or modification. Waur (1982) cites testimony of grizzly bear claws for sale within 200 miles of the park and killing of grizzly bears by black bear hunters.

Park files and the interagency grizzly bear study team annual reports (Knight, et al, 1974-1982) indicate that of 81 grizzly bears that died in the Yellowstone ecosystem since 1974, 59 were man-caused actions outside the park (see Table 9). Of the 59, 35 were attributed to illegal kills. The others were attributed to State control actions, legal hunting in 1974, bears killed by cars, and accidental trapping mortalities.

Waur (1982) also cites new and increasing developments surrounding Yellowstone National Park, including potential geothermal developments at Island Park and oil and gas in the Gallatin Natinoal Forest and the Washakie Wilderness as contributing to the erosion of grizzly bear habitat. Other activities, such as logging operatons and livestock grazing also compete with grizzly habitat.

On the other hand, Table 9 shows that up to October 1, 1982 only nine grizzlies were man-caused mortalities in the park since 1974. Of these, three were accidental deaths during research trapping operations.

Table 8. Summary of females with young observed, 1974-81

Year	Females w/cubs	Cubs	Ratio
1974			
Cumulative	21	36	1.7
Unduplicated	15	26	1.7
1975			
Cumulative	5	8	1.6
Unduplicated	4	6	1.5
1976			
Cumulative	36	69	1.9
Unduplicated	17	35	2.0
1977			
Cumulative	24	43	1.8
Unduplicated	13	25	1.9
1978			
Cumulative	15	31	21.
Unduplicated	10	19	1.9
1979			
Cumulative	21	39	1.9
Unduplicated	13	26	2.0
1980			
Cumulative	13	26	2.0
Unduplicated	9	19	2.1
1981			
Cumulative	17	32	1.9
Unduplicated	13	22	1.7

SOURCE: Knight et al (1982)

Table 9. Grizzly Bear Mortality

Year	Within Yellowstone National Park			Outside Yellowstone National Park			
	Man-Caused	Natural	Unknown	Man-Caused	Natural	Unknown	Total
1974	2	0	0	10	0	1	13
1975	0	0	0	0	0	0	0
1976	1	0	0	3	0	0	4
1977	1	0	0	7	1	3	12
1978-79	3	0	0	16	0	0	19
1980	1	0	0	3	2	1	7
1981	0	2	0	13	0	0	15
1982 (to 10-1)	1	0	0	7	1	2	11
Totals	9	2	0	59	4	7	81

Source: Knight, et al, 1974-1982. (through 1981)
Park files (for 1982)

The modified plan would place even greater emphasis than in the past on obtaining cooperation and commitment from agencies and individuals outside Yellowstone National Park towards education about the grizzly bears' plight, better enforcement of regulations to protect the bears and enhance their habitat.

The overall conclusion is tht long-term perpetuation of a viable population will depend on land use and management practices throughout the Yellowstone ecosystem, of which the prk is merely a part.

2. Impact on Other Natural Resources in the Park

In general, intraspecific and interspecific relationships and interactions of many plant and animal species may be affected by the restoration of the black and grizzly bear to their natural distribution, abundance, and behavior. The current knowledge of the ecological role of the grizzly bear in a natural ecosystem is increasing with each year of study by the interagency team. Studies of food habits and habitat use by grizzlies indicate a wide variety and abundance of food in different vegetative types throughout most of the ecosystem. Knight et al, 1977, states: "Foods eaten varied considerably within each type and often did not reflect vegetative composition of the type. Animal foods like ants, rodents, or ungulates are not reflected in habitat analysis but are used in almost all habitat types. It does not appear a single or selected group of habitats can be singled out as critical for the bear. The bear makes use of all habitats available and probably requires the options that a variety of habitats provides."

Knight states further: It appears that no one food plant is of critical importance in the grizzly bear diet. Many of the plants are used seasonally but overall, there does not appear to be a food shortage for bears.

3. Impact on People

Bears, both grizzly and black, are creatures of habit. It is believed that if the habit of eating man's food is broken, "if bears were deprived of handouts and if all garbage cans were made bearproof, the animals would be forced to seek their natural foods which are just as abundant today as they were before man came on the scene." (Cahn 1968). Such a change of habit would reduce human-bear contact, hence reducing possibilities of human-bear confrontations, hence improving visitor safety. Since the inception of the policy to remove "unnatural" food sources began, bear incidents involving personal injuries have decreased (see Table 6). It is probable they would decrease further under a modified plan.

When protection of grizzly bear populations and habitats, and/or sanitation standards require that particular campgrounds, backcountry campsites, trails, and fishing areas be restricted or closed to human activity, opportunity for the visitor to enjoy the park is subsequently lessened. Additionally, official reprimand by government (park) authorities either through verbal warnings or citations is not a pleasant experience for anyone, and especially for a park visitor whose purpose in the park is for a pleasant experience. The desirable experience of feeding a bear, as a visitor may envision it, would be

denied to him. Generally speaking, the more a park visit is structured (i.e., by rules and regualtions), the more the feelings of "freedom" and "relaxation" and the like are lessened. The incentive of visitors to leave roads and developed areas, or to camp would be reduced. More ranger patrols would be required to enforce the regulations.

Improvement of visitor safety is the purpose and direct consequence of any bear control measure. Some visitors will appreciate the removal of danger and other visitors will not. Unfortunately, the proportions of both are unknown within the visitor-public as a whole. Gardiner B. Moment is a well-known advocate of hazard removal and speaks for the complete elimination of the grizzly from the park. "Old Faithful and St. Mary Lake cannot be seen elsewhere nor can they be transplanted. Grizzlies can." (Moment 1970.) The general public is probably distributed on a normal curve between these two extremes.

Lastly, bear control operations would be conducted in such a manner as to minimize the possibility that the park visitor could unintentionally blunder upon a baited trap or into a control action in progress. (See Bear Management Policy 4.d., above.)

Abiding by strict sanitation standards requires precautionary practices and generally more time and energy than not abiding by such standards. The storage of camping and food supplies, the pack-in, pack-out rule for backpackers, and required trash disposal methods would be inconveniences for park visitors.

Although probably not extensive, particular gear for camping and hiking activities may be warranted in order to abide by sanitation standards, and this would entail additional investment to the park visitor.

Fewer bears would be seen by visitors, but those seen are more likely to represent a wild bear's natural behavior.

4. Impact on Historical-Archeological Resources

After consultation with the National Register of Historic Places and National Park Service historians it has been initially determined that none of the historic or archeological resources in the park will be affected by the proposed action. However, the historic preservation officers of the States of Montana, Idaho, and Wyoming and appropriate persons at the Midwest Archeological Center have been contacted in order to insure that the park's historic and archeological resources are adequately considered. The Advisory Council on Historic Preservation has also been consulted.

5. Impacts on Waste Handling

The increased standards of solid waste management, as proposed in the modified management plan would significantly reduce the potential pollution of surface and ground waters and terrestrial environments with man's garbage and litter. This in turn would enhance the park environments for human use, and, equally as important, would decrease the impact and stress of man on the national park ecosystems.

B. Mitigation Measures Included in the Proposed Action

1. Information and Interpretation

The objective is an informed public with an appreciation of the aesthetic value of bears and awareness that exposing bears to man's food and garbage increased the probability of conflict between people and bears and may lead to personal injury and/or destruction of bears.

An active information program would be directed at park visitors and park and concessioner employees to keep them advised of policies and goals of bear management and the reasons for them. This program would include:

An annual review and, as necessary, a revision of bear warning and related literature to insure accuracy of factual matter and pertinence to objectives. All outdated materials except for official file copies would be destroyed.

Information concerning bears and bear hazards would be presented prior to or during campfire programs, conducted walks and hikes, and as appropriate at other interpretive programs.

Annual orientation programs would be scheduled to inform all seasonal park employees and concession employees of black and grizzly bear hazards and of their respective responsibilites concerning individual and public safety and protection of park resources. This orientation would be continued on a less formal basis throughout the summer.

There would be some impact on visitor satisfaction of the reduced possibility of viewing bears. Facets of the educational program which explain that bears are shy and solitary and therefore difficult to observe in their natural condition, would help to mitigate visitor dissatisfaction.

The impact of restricting visitor use by permanently or temporarily closing areas being frequented by bears can be mitigated in several ways. Firstly, although in fact visitors' opportunities for park enjoyment may be lessened, the action helps to prevent human-bear confrontation which could result in bodily injury to visitors. Secondly, when the decision is made to close a particular area, visitors would be told of alternative locations available to them so that they may still pursue their chosen activity.

Visitor inconvenience and expense associated with gear necessary for sanitation regulations will be somewhat mitigated by park assistance.

Campers can purchase rope at campstores for food suspension in campgrounds. Trash receptacles are placed close and convenient to campgrounds and visitors will be strongly encouraged to use them. Park staff members are always available to assist and explain useful procedures to campers.

2. Mitigation of Control Actions

The U.S. Fish and Wildlife Service would be consulted on all control actions, either directly or through a programmatic memorandum of agreement. When it becomes necessary to capture and relocate a grizzly bear, attempts would be made to select a relocation site within or adjacent to the bears' previous home range. The dangers inherent in any bear control action would be mitigated against by warnings issued by park personnel, by posting the control areas (especially those where traps will be used) with conspicuous warning signs, and by guarding baited traps when there is reason to believe that harm to visitors may result. Only park personnel adequately trained in the control measures necessary to carry out specifically assigned tasks would be employed on a control action team. No bystanders would be permitted. All DEA and FDA regulations would be followed with respect to the use of immobilizing drugs. Control actions would be located and timed to minimize public involvement.

Problem bears may be unintentionally killed during a control action because of a drug overdose or other handling problems or by being shot when charging humans during the operation. Such possibilities would be mitigated by proper training in capture techniques and the use of live traps as first choice. Bears killed-accidentally or deliberately--would be used as scientific specimens.

C. Any Adverse Effects Which Cannot be Avoided Should the Proposal be Implemented

The wilderness is inherently dangerous. Many people seeking a wilderness experience are seeking the challenge of coping with the wilderness on a purely personal basis. It is an unavoidable probability that some number of wilderness users would suffer adverse consequences as a result of their wilderness experience. As long as there are grizzly bears, there would always be some element of danger, however minimized and mitigated, to park visitors, especially in the backcountry. Human danger must be considered in two ways. Danger which becomes a reality in personal injury is a complete and total negative consequence, an unavoidable adverse effect of the management program. However, the aura of danger which does not become a violent reality is an integral part of human experience in the wilderness for many.

An illustration of this seeming contradiction is a statement in 1968 by a Glacier National Park visitor, Robert Hahn, after he himself was injured by a grizzly bear: "The thing that makes me very unhappy about the whole incident is my fear that this will only add fuel to the fire for those people who advocate the destruction of the grizzly to make our national parks safe . . . The only thing that will prevent me from hiking in the wilderness again is the eventual destruction of that wilderness itself and when anyone advocates the destruction of grizzlies they are in essence advocating the destruction of true wilderness." (Herrero 1970.)

But once again, . . . "For a person who neither loves nor understands the grizzly any risk is too great." (Herrero 1970.) In other words, by allowing the potential of realized danger to occur (such potential is very small, as mentioned previously). For example, in 1978,

two persons were injured by bears out of 1,623,141 who visited Yellowstone National Park that year, or less than one per million, one of which involved a black bear rather than a grizzly. Thus the benefit of "true wilderness experience" is preserved for others.

For those visitors whose trips to Yellowstone National Park were highlighted by feeding bears or observing black bears up close there would be a loss. Some number of visitors may be completely dissatisfied with their park visit without such experiences, and some may have their negative attitudes reinforced by having been cited for violating regulations concerning bears.

Although a modified program emphasizing grizzly bear perpetuation should result in fewer situations necessitating a bear-control action, the adverse effect of a bear being killed many not be avoidable.

D. The Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

The purpose of the proposed action, i.e., the restoration and maintenance of a wild grizzly bear population, is to minimize and offset the stresses and impacts associated with man's short-term uses of the park environments to insure that those environments will remain unimpaired for the benefit and use of future generations.

While it is the intention that the increased regulation of human activity in Yellowstone National Park would accomplish a great deal in preserving the Yellowstone ecosystem, including the grizzly bear, it may not be equally apparent that the intent of the bear control program is to have a similar effect of preserving the integrity of the Yellowstone National Park ecosystem.

When the decision is made to control a problem bear and the bear is killed, there is the immediate loss of a member of the grizzly or black bear population. This loss is expected to be less pronounced under a modified management plan than with past practices. However, when one less bear who has adopted the behavior pattern of frequenting campgrounds or otherwise foraging for man's food is eliminated, the grizzly population is that much further along in being restored to its wild, free-ranging nature. An additional direct, long-term benefit of the removal of a problem bear is that future public safety is enhanced.

When the control situation requires a bear to be relocated, that particular bear will go through a temporary readjustment period resulting from the stress of transplant and the process of defining new home territory with a bear population already in the area. Over the long run, the bear has been removed from a potentially dangerous (to humans and the bear) situation and the population is closer to being a totally wild, free-ranging population. Again, the occurrence of such readjustment periods is expected to be less under a modified management program which gives greater emphasis to perpetuation of grizzly bears.

When the management program requires that a visitor use area be temporarily closed due to potential human-bear confrontation, the loss

in terms of limitations on visitor enjoyment is immediate. Such actions cumulatively over time, however, enhance public safety and lessen the number of grizzlies in the population which have experienced contact with humans and hence are not given the opportunity to establish any undesirable behavioral relationships with humans. With the substitution of suitable alternative visitor use areas, the loss of enjoyment will be diminished.

The visibility of bears in Yellowstone is important to many park visitors. A consequence of the sanitation phase of the bear management program is to reduce the probability of this visibility and "not seeing a bear" may be disappointing. In actuality, past viewing displayed the bear in an artificial manner which led to unsafe human behavior, and perpetuated and ill-informed public in terms of what bears "were really like."

In the future, therefore, when a bear is viewed, the visitor will see the animal as a wild animal in its natural ecosystem. Future observations will contribute to a better informed public that understands the true nature of the bear, both black and grizzly, appreciating it on its own terms as part of the Yellowstone ecosystem.

The inconvenience to the visitor of regulations and standards designed to reduce hazardous human-grizzly contacts will in a sense be short-term. Although the initial perceived inconvenience is adapted to and becomes routine procedure as part of a visit to Yellowstone, the perception of inconvenience should dissipate. Therefore, the long-term end product becomes the positive benefits of modified human behavior which reduces the potential for hazardous human-grizzly contacts.

E. Impacts - Alternative B: Continue Existing Program

1. Impacts on Bears

The background for the present grizzly bear management program is the same as that given for Alternative A. However, durng 1959-67 it was estimated there was an average of 200 grizzly bears in Yellowstone National Park and adjaent national forests, with the bear population growing at an average annual rate of six grizzlies per year (Craighead and Craighead, 1971). Since then, the Interagency Grizzly Bear Study Team is studying a larger area, census techniques have differed, and there was an increase in the number of problem bears that had to be killed or removed from the population immediately following closure of the dumps. See Tables 5 and 7. However, such actions have become progressively less necessary and, from 1973 through 1981 only eight grizzlies have been removed from the population in park management operations (vs. 20 bears in 1970). Nevertheless, Knight, et al (1982) estimated the Yellowstone grizzly bear population at 197. The U.S. Fish and Wildlife Service (see Appendix D) estimates it takes a 98% survival rate to provide a sustained population increase, while the 1981 survival rate was 87%.

There is a concern that past park management practices together with influences and conflicts with men's activities outside the park have contributed to the decline of the grizzly bear population.

The impact of continuing the existing grizzly bear management program would make similar requirements as Alternative A for the park's grizzly bears to rely exclusively on natural food sources, but without the option of providing for supplemental feeding. Continuation of the present management plan would require only that areas of high grizzly concentration be temporarily closed to public use. Areas of lesser concentrations of bears would not necessarily be closed and could result in continued human/bear encounters, particularly in prime habitat. Without more explicit controls than have been used in the past, increased human/bear conflicts could be anticipated with an expected growth in park visitation (see Figure 8 and Table 2). The past management practices have often called for grizzly bear control actions when such encounters occurred. Although the present management program calls for strict accounting and adherence to procedures when bear control actions are initiated and carried out, it seems likely there would be more of such actions taking place than under a modified program as under Alternative A. The result could have greater detrimental effects on the grizzly bear population.

Continuation of the management program would have some adverse effect on the grizzly bear population whenever control actions are needed. While the objective is to reduce to zero the use of garbage and other introduced foods by bears, it is recognized that individual grizzly bears may occasionally become dependent upon man's food through human carelessness. Bears may also accidentally wander through campgrounds located near prime habitat such as at Fishing Bridge or Canyon. If food is received, the bear may become accustomed to man's food. When attempts to restore such bears to an independent existence fail, they would be removed from the population as a public safety measure. It is difficult to predict the number of grizzly bears that annually may be affected by this phase of the management program. If the average since 1973 of less than one grizzly removed from the park per year does not increase in the future, then this control factor would probably be insignificant. If the invasion by humans of grizzly habitat both inside and outside the park continues at the present rate however, then both the reduction of habitat and human induced mortality could be a serious detriment to the bears' survival.

Long-term perpetuation of a viable population will depend on land use and management practices throughout the Yellowstone ecosystem, of which the park is the core part. Because these conditions are subject to change either to the benefit or the detriment of the grizzly bear, the long-term prognosis for survival of a wild grizzly bear population is not certain under the continuation of the present management program. The present management program takes a less active role than the proposed action, as far as closure of areas, being more restrictive of visitor use and initiating positive management actions on the part of other agencies is concerned. Nevertheless, the existing management plan recognizes that the Recovery Plan provides a framework to achieve a viable population in the Yellowstone ecosystem.

The impacts on black bears would be similar to that described under the impacts for Alternative A.

2. Other Impacts

The impacts on other natural resources of the park, on historical and archeological resources, and on waste handling would be similar to that given under the impacts for Alternative A.

The present rigid control of garbage, control actions, and the extensive public information effort consumes about $275,000 of the park's operating budget (1981).

Impacts on people would be similar to that for Aternative A, but visitors would not perceive as much restriction of use, i.e. areas would be closed only temporarily, not necessarily permanently, as a means of public safety rather than emphasis on perpetuating grizzly bear populations and habitat.

3. Mitigation Measures

The information and interpretation efforts continuing under the present program would be similar to those for Alternative A. The mitigation measures for control actions would also be similar to Alternative A, except that coordination with the U.S. Fsh and Wildlife Service would continue on a case-by-case basis at the discretion of the Superintendent.

4. Any Adverse Effects WhichCannot be Avoided

Unavoidable adverse effects would be similar to that for Alternative A, except that there may be occasion for more situations requiring a bear-control action in which the adverse effect of a bear being killed may be unavoidable. In 1978, for example, the fact that two grizzly bears were killed in control situations was an adverse effect of the program.

5. The Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity.

This relationship would be similar to Alternative A except to recognize that the existing management program has had emphasis on public safety as opposed to the modified program's greater emphasis on perpetuation of grizzly bear populations.

F. Impacts - Alternative C: Further Restrict Visitor Use

No fence can be considered bear-proof, and it is highly likely that occasionally a bear--either black or grizzly--will gain entry to the enclosure. A bear inside a fenced enclosure may become disoriented and frightened. This could result in an extremely hazardous situation to both humans and bears.

Supposed bear-free enclosures would provide campers with a sense of security from bears and would permit them to camp in a more relaxed and carefree manner. Some campers may subsequently limit their park experiences to the campground sanctuaries fearing nonfenced environments.

The fencing of campgrounds would have a minimum of influence on bear movements (other than into the areas themselves) and habitats.

The development of enclosed campgrounds would require the construction of several miles of fence that would be inconsistent with the park scene. The potential for impacts on archeological and natural resources of the park would be increased and would require examination.

The flexibility of park development would be reduced by making it more difficult to relocate, decrease, or enlarge campgrounds.

Fenced campgrounds as described would constitute a safety hazard to visitors coming in contact with the electric wires or attempting to scale the fence.

The cost of campground maintenance and operation would increase significantly. (It would probably be necessary, for instance, to have almost daily inspections of the fence line and to post a guard at the campground entrance 24 hours per day.)

Some visitors may feel unduly restricted by fenced campgrounds.

Grizzlies would have fewer conflicts with man.

Fewer control actions would reduce the trauma to bears of being handled in traps.

The bears would have a freer choice of habitat.

All visitor impacts from alternative A would apply, plus further restriction of activity. This alternative could be used in conjunction with Alternative A.

The public information output would have to increase to explain tighter restrictions.

More intensive patrols and law enforcement would be required.

Fewer management actions would be required.

The diversity and naturalness of the ecosystem would be further enhanced.

Outside management agencies might be faced with a recreation spinoff from the park because of the park's tighter restrictions on visitor activity.

1. Mitigating measures

The aesthetic impact of fences could be offset to some extent by sensitive design and location.

The fences would be located to avoid archeological sites when feasible or if unfeasible the recovery of artifacts could be accomplished prior to construction.

Interpretive programs could be instituted to offset the belief that only those areas behind fences are safe.

Unfenced campgrounds could be provided for those individuals for whom the enclosed campgrounds would detract from their park experience.

Signs could be provided to warn visitors of the hazards of coming into contact with high voltage electric fences.

2. Unavoidable adverse impacts

The degree of impact of fence construction would depend on the miles of fence to be built and the nature of the environment through which it was built. A fence through lodgepole forest, for instance, would require a clearing of sufficient width to preclude trees falling across the fence. (As the clearing would have to be maintained in the early stages of plant succession, the clearing could provide habitat requirements that would be attractive to bears.)

The aesthetic intrusion upon park environments and loss of the feeling of "openness" could not be avoided.

3. Short-term versus long-term relationships

The permanency of bear-proof fencing would tend to make the location and size of campgrounds static. Such continually heavy use of campgrounds would very likely result in a deterioration of campground environments (vegetation, soil compaction, etc.).

V. List of Preparers

The 1974 DEIS was prepared by the staff at Yellowstone National Park, including:

Ted Bucknall (retired), and

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The 1981 Revised DEIS was prepared by Dr. Meagher, James Reid, and:

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This Final EIS was prepared by Dr. Meagher and Robert Kasparek.

VI. Consultation and Coordination with Others

The proposed grizzly bear management program is the continuation of a program initiated in the 1930's (Wright and Thompson 1934), and reaffirmed in 1969 (Leopold 1969). Since 1969 there have been annual meetings with various Federal and state agencies and organizations, including the Fish and Wildlife Service, U.S. Forest Service, state game and fish departments of Idaho, Montana, Wyoming, and Colorado, the International Association of Game, Fish and Conservation Commissioners, and others that have provided review and comment of the grizzly bear management program.

The DEIS comments on the 1974 statement were requested from the following:

Federal Agencies

Department of Agriculture
    Forest Service
Department of Health, Education and Welfare
    Public Health Service
Department of the Interior
    Bureau of Land Management
    Bureau of Outdoor Recreation
    Fish and Wildlife Service
Environmental Protection Agency
    Bureau of Solid Waste Management
President's Advisory Council on Historic Preservation

State Agencies

Idaho State Clearinghouse
Idaho State Historic Preservation Office
Montana State Clearinghouse
Montana State Historic Preservation Office
Wyoming State Clearinghouse
Wyoming State Historic Preservation Office

Private Organizations and Citizen Groups

The Conservation Foundation
Defenders of Wildlife
Friends to Animals, Inc.
Friends of the Earth
Fund for Animals
Idaho Chapter, The Nature Conservancy
Idaho Recreation and Park Society
Idaho Wildlife Federation
Idaho Wildlife, Inc.
International Association of Game, Fish and
  Conservation Commissioners, Grizzly Bear Committee
Montana Division Izaak Walton League of America

Montana Wildlife Federation
National Academy of Sciences
National Parks and Conservation Association
National Wildlife Federation
The Wilderness Society
Wyoming Outdoor Council, Inc.

The 1981 Revised DEIS was sent to the following:

Federal Agencies

Environmental Protection Agency
Bureau of Land Management
U.S. Fish and Wildlife Service
Bureau of Indian Affairs
U.S. Geological Survey
Bureau of Reclamation
Forest Service

State Agencies

Idaho State Clearinghouse
Montana State Clearinghouse
Wyoming State Clearinghouse
Alaska Department of Fish and Game
New Jersey Division of Fish, Game and Shellfish
California Department of Fish and Game

Organizations

ARCO Oil and Gas Company, Denver, Colorado
National Rifle Association of America, Washington, D.C.
Public Service Company of New Mexico, Albuquerque, New Mexico
The Institute of Ecology, Indianapolis, Indiana
Border Grizzly Project, University of Montana, Missoula, Montana
Washington Post, Washington, D.C.
Faculty of Forestry, University of British Columbia, Vancouver, British Columbia
Wildlife-Wildlands Institute, Missoula, Montana
The Wildlife Society, Idaho Chapter, Coeur d'Alene, Idaho
The Wildlife Society, Colorado Chapter, Fort Collins, Colorado
Friends of Animals, Inc., New York, New York
Environmental Research Institute, Moose, Wyoming
Cooperative Wildlife Research Unit, University of Montana, Missoula, Montana
The Fund for Animals, Washington, D.C.
Department of Wildlife Service, Utah State University, Logan, Utah
National Academy of Sciences, Washington, D.C.

Faculty of Graduate Studies, University of British Columbia, Vancouver, British Columbia
Wildlife Management Institute, Washington, D.C.
The National Wildlife Federation, Washington, D.C.
College of Basic Studies, Boston University, Boston, Massachusetts
Librarian, Colorado State University, Fort Collins, Colorado
Wyoming Wildlife Federation, Buffalo, Wyoming
University of Calgary, Calgar, Alberta, Canada
Government of Yukon, Whitehorse, Yukon
Amuedo and Ivey, Inc., Denver, Colorado
Western Fuels Association, Inc., Washington, D.C.
National Parks and Conservation Association, Washington, D.C.
Defeders of Wildlife, Rock Springs, Wyoming
Humboldt State University, Arcata, California
Market Towers I, Aurora, Colorado
Environmental Management Services Co., Fort Collins, Colorado
Ecology and Environment, Inc., Buffalo, New York
Dames and Moore, Park Ridge, Illinois
Veritz, Smith and Clark, Tucson, Arizona
Camp, Dresser and McKee, Inc., Wheat Ridge, Colorado
Caltrans Environmental Planning, Bishop, California
Sierra Club, San Francisco, California
Environmental Science and Engineering, Inc., Englewood, Colorado
Environmental Impact Services, Tucson, Arizona
AMAX Environmental Services, Golden, Colorado

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Eric Hague
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C. Excerpts from Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area

D. Section 7 Consultation - Biological Opinion

E. Comments Received on the Revised Draft EIS, and Responses To Those Comments.

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APPENDIX B

ANNUAL BEAR MANAGEMENT PLAN
Yellowstone National Park
1982 Season

I. Organization

A. All field operations in bear management will be under the supervision of the Forestry, Fire and Bear Management Specialist. In this function, he will work through the District Rangers and will be acting for the Chief Ranger. He will also be responsible for the monitoring system and for coordinating reports of bear observations, incidents, and management actions, and for the procurement of drugs.

B. Each district will assign one ranger to oversee the bear management operation in that district. This individual will be responsible for seeing that the provisions of this plan and the Bear Management Policy are carried out within his respective district.

C. Each park employee will be responsible for reporting to the Communications Center the bears he or she observes and for forwarding reports of bear sightings received from visitors.

II. Public Information

A. Warning literature, posters and signs are to be continually evaluated as to content and effectiveness. Outdated literature, posters or signs are not to be used.

B. The following are current for distribution at entrance stations:
1. Enjoy Them At A Distance
   yellow leaflet - GPO 622-294-3.1
2. Danger - Your Safety?
   red folder - GPO 1978-728-020
3. Park Brochure
   GPO 1979-281-353/67 Reprint 1979

C. For distribution to backpackers and/or hitchhikers:
1. Beyond Road's End (booklet)
   GPO 1976-777-225/13 (1981)
2. Beyond Road's End (info sheet)
   YELL 440, Rev. 01/80
3. USFS/NPS Grizzly Folder
   beige color, no date or GPO number

D. Information Sheets
1. Grizzly Bear/Black Bear combination
   YELL 464/466 single sheet
2. Yellowstone Black Bears
   Information Paper No. 24 (Revised 3/79) single sheet
3. Summary of Yellowstone Bear Protection and Management Policies, April 1977, single sheet

E. Posters
1. "Danger" and "Attention" trailhead posters, White, 11" x 14"
2. "Warning Bear Habitat" campground poster, Orange, 12" x 12", 5/78
3. "Warning" and "Danger" backcountry posters, Orange, 8" x 10", set of 5, GPO 780-286, 1/77

F. Signs

1. Entrance, "Park Regulations Prohibit Feeding or Molesting of Animals - Warning-Bears and Other Large Animals are Dangerous - For Your Safety Do Not Feed Wildlife - View From A Safe Distance" Approximately 6' x 6', Top third of sign is brown with yellow letters, bottom 2/3 is yellow with brown letters.

2. Campground Warning, "Warning - Yellowstone is Bear Country - Use Extreme Caution - Food must be Secured from Bears - Read Regulations on Camp Bulletin Board." Yellow with brown letters.

3. Hard-Sided Units Only

   a. "Hard-Sided Vehicles Only - Closed to Tents - Tent Trailers, Pop-Up Vans, and Sleeping on the Ground - Area Frequented by Bears." Yellow with brown letters.

   b. "Warning - This Campground Closed to Tents, Tent Trailers, Pop-Ups and Sleeping on the Ground - High Bear Frequence." Yellow with brown letters, 1'8" x 3'2".

4. Backcountry Trails

   a. "Bear Danger - Travel Beyond this Point is Restricted to Parties of Four or More." Yellow with brown letters.

   b. "Travel Restricted to Established Trails by Parties of Four or More or Horse Parties."

5. Bear Traps, "Danger Keep Away", White with red letters.

G. Stencils

1. Campground picnic tables, "Danger - Bear Country - Keep a Clean Camp - Secure Your Food." Yellow painted on brown picnic tables.

III. Management Actions

A. Developed Areas - Any Bear

1. Report all management actions, incidents, and sightings promptly through the Communications Center.
2. Follow-up of bear reports by ranger personnel is important to identify kind of bear and to learn behavior patterns.

3. Night patrol will inspect area carefully for any possible food source.
4. Verify the garbage pickup schedule. Arrange for late-evening pickup if necessary.
5. Double check the food storage situation, i.e. campground, residents' garages and back porches, garbage cans left out, etc.
6. Investigate any signs of, or rumors of, deliberate feeding and use the citation as the primary means of suppressing this activity.
7. Any presence of a bear in a campground or developed area, even without evidence of getting food, demonstrates sufficient persistence for careful investigation and follow-up removal, if necessary.
8. If bear got anything to eat, consider removing promptly.
9. Any bear foraging in the daytime in a developed area is to be considered for prompt removal.
10. Intensify night patrol coverage along with persistent bear activity of drug/trap operation.

B. Backcountry

1. Prevention is the ideal. Transplant/removal will be a last resort. An option: restrict parties to minimum of four or more.
2. Any Bear, designated campsite
   a. Close campsite and police.
   b. According to location, consider closing and relocating site, temporarily or permanently.
3. Any Bear, Patrol Cabin
   a. Check for attractants in cabin, barn or immediate area.
   b. Check shutters and doors for secure fit.
4. Female With Young, any backcountry area
   a. Black - usually sufficient to monitor bear's activites. Temporarily close trail or area if confrontation reported.
   b. Grizzly - monitor activity and close trail if persistent or if confrontation occurs. Warn all hikers in area. Experienced ranger to check area firsthand, to see if use transient or resident.
5. Grizzly with carrion near trail
   Monitor and take action as with grizzly female with young (4b). Post "Warning - Be Alert" signs.

6. Restricted Areas
   a. The Bighorn Pass Trail, the Fawn Pass Trail and the Sportsman Lake Trail from Cache Lake Junction to the Gallatin Crest are restricted to horse parties or to foot parties of four or more people. Cross-country camping is prohibited in this area.
   b. The Mary Mountain area is restricted to daylight use, and then only with string bear warnings. There are no designated campsites in this area and cross-country overnight travel is prohibited.

IV. Drugs

A. Drug Procurement and Distribution

1. Succostrin
This is the only operational capture drug that will be readily available in the field. It will be distributed early in the season to each station likely to have a need for it.
2. Sernylan
This is now restricted as a Schedule II narcotic and must be kept in the safe in Mammoth. It will be dispatched by courier for each operation in which it is needed, will be used only by specially assigned and trained personnel; and will be returned to Mammoth by the courier on completion of the drugging operation.
3. M-99 and M-50-50
Procedure the same as for Sernylan.

B. Immobilization Procedures
These are contained in the Immobilization Manual.

V. Trapping and Transplanting

A. Trapping will be done in accordance with procedures outlined in the Bear Management Policy.

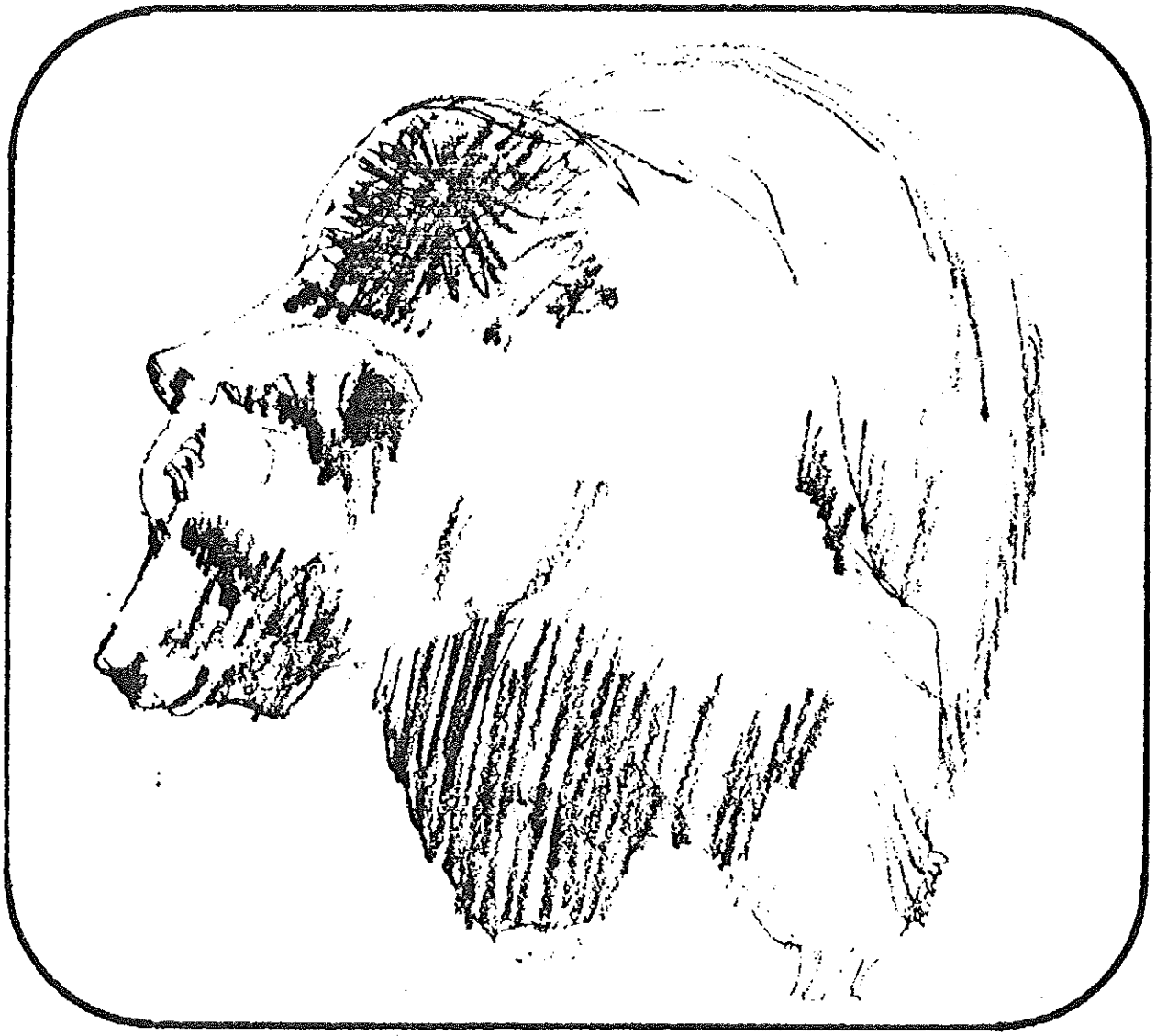
B. Any captured bear (by trap, drug, etc.) will be secured in a culvert bear trap and immediately moved to a pre-determined location within your assigned area for the safety of the animal and away from unauthorized human contact. Immediately contact the Forestry, Fire and Bear Management Specialist with such information.

C. All traps will be locked with a ranger lock when not in use, or when an animal is in the trap.

D. Ear Tags - All bears captured for transplant will be ear tagged with the 7700 series aluminum strap tags. These will be placed on the outer edge of the right ear.

APPENDIX C

GUIDELINES FOR MANAGEMENT INVOLVING GRIZZLY BEARS IN THE GREATER YELLOWSTONE AREA...



BRIDGER-TETON
SHOSHONE
CUSTER
GALLATIN
TARGHEE

National Forests

DECEMBER 1979

GRAND TETON
YELLOWSTONE

National Parks

PREFACE

These guidelines were developed as an interagency effort. All agencies indicated their approval through letters to the Shoshone National Forest Supervisor.

The guidelines were submitted to the U.S. Fish and Wildlife Service for formal consultation as required by 50 C.F.R., Sec. 402.04. The Biological Opinion states, "It is our opinion that implementation of the Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area will promote conservation of the grizzly bear". The Biological Opinion is enclosed as an appendix to the guidelines.

Management of the grizzly bear in Yellowstone National Park will be in accordance with the Yellowstone Operating Procedure for Bear Management. Yellowstone Park is totally within management situation 1 (see pages 3, 4, and 53).

The recommendations made in the Biological Opinion will be addressed by the appropriate agency when they implement these guidelines.

FOREWARD

There are many different images of the grizzly bear in the public view. Visions of fear and intimidation are often expressed along with those of beauty and respect.

In general, the public attitude toward grizzlies, as expressed through laws and regulations, has changed significantly during the last two decades. Officially, the grizzly can no longer be treated uniformly as an enemy and marauder to be killed without regulation or otherwise condemned as a result of actual or anticipated conflict with man. Instead, the species is now highly valued for its own sake and for the sake of maintaining ecosystem stability through species abundance and diversity. In addition, the grizzly is highly valued as a representative, perhaps an indicator, of truly wild places which anchor the human conscience in images of human and nonhuman origins and pristine ecosystem functioning.

The resource management agencies in the Greater Yellowstone Area are proud to accept the management charge of the Endangered Species Act to conserve the grizzly bear, a threatened species. These management guidelines will serve as the basis for our aggressive pursuit of the objectives of conserving grizzly bears and their habitat and of providing balanced resource uses to meet the overall management goal of providing a sustained flow of all wildland resources.

I. INTRODUCTION

The Endangered Species Act (ESA) (P.L. 93-205) requires special protection and management on Federal lands for the grizzly bear (Ursus arctos horribilis), a threatened* species*. Forest Service and Park Service personnel cooperatively developed guidelines for grizzly protection and management in the National Forests and National Parks of the Greater Yellowstone Area (Figure 1, page 52) in compliance with ESA (FSM 2601.1).

II. BACKGROUND

Grizzly bear populations and distribution have been greatly reduced in the Western United States since the early 1900's because of loss of habitat and conflicts with man. One of the last remaining grizzly populations occurs in the Greater Yellowstone Area. Here, the welfare of the grizzly bear has greatly concerned scientists and laymen, especially during the last decade. The effects of open-pit garbage dump closures, hunting, domestic livestock grazing, roads and road construction, recreation activities, and logging on grizzly bears and their habitat have been concerns. The Interagency Grizzly Bear Study Team, with members from the National Park Service, U.S. Forest Service, U.S. Fish and Wildlife Service, and the States of Idaho, Montana, and Wyoming, was appointed in 1973, to provide research information about the grizzly population and its habitat in the Yellowstone Area. In July 1974, an ad hoc committee of the National Academy of Sciences concluded that the Yellowstone grizzly was not in immediate danger of extinction, but that conservative management of the species was necessary.

On August 1, 1975, the grizzly bear south of Canada was determined to be a threatened species by the Secretary of Interior under ESA authority. This determination required Federal agencies to:

1. utilize their authorities to carry out conservation programs for listed species;
2. insure that their activities not jeopardize the continued existence of a listed species; and,
3. insure that their activities or programs not result in the destruction or adverse modification of critical habitat.

III. POLICY

A. Park Service Grizzly Bear Policy

Management policies of the National Parks are designed to:

1. perpetuate wild, free-ranging grizzly bear populations; and,
2. minimize conflicts between humans and grizzly bears by reducing man-generated food sources and by regulating visitor distribution.

Specifically, the Park Service will identify, within Park boundaries, grizzly habitat requirements. As necessary, the Service shall control visitor use and access to such habitat, including closure to entry for other than official purposes. Active management programs, where necessary, will be carried out to perpetuate the natural distribution and abundance of grizzlies and the ecosystems on which they depend, in accordance with existing Federal laws. The Service will cooperate with the Fish and Wildlife Service, which is recognized as the lead agency in matters pertaining to threatened or endangered species.

Management actions for the protection and perpetuation of grizzly bears shall be incorporated into the resources management plan. The Yellowstone and Grand Teton National Park Grizzly Bear Management Programs are included in the Appendix, page 66. The Programs will complement and supplement these Guidelines.

B. National Forest System Grizzly Bear Policy

National Forests in the Greater Yellowstone Area will conserve* the grizzly as a species (ESA) and provide habitat suitable for the perpetuation of the species (FSM 2603).

*See glossary Page 65

Grizzly bear habitat will be maintained and enhanced, and grizzly-human conflict* potential will be minimized. State wildlife management agencies and the U.S. Fish and Wildlife Service will, after consulting with the National Forests, perform grizzly control actions including live-trapping, relocation and removal. Specific policy is stated for the following resource management systems.

1. Wildlife Management

As a threatened species, grizzly bears will receive, along with other listed species, the highest priority in maintaining and developing suitable habitat through:

a. coordination of grizzly population and habitat needs with the management of other National Forest resources; and

b. specific habitat improvement projects (FSM 2630.2). Habitat improvements which have an adverse impact on grizzlies will be deferred (FSM 2630.3).

The possible effects of existing or proposed land uses upon grizzlies and/or their habitat will be determined through a competent review or biological assessment (FSM 2670). The "Method for Determining Grizzly Bear Habitat Quality and Estimating Consequences of Impacts on Grizzly Habitat Quality" (Appendix, page 79) is recommended for review or assessment of major projects or activities.

2. Timber and Fire Management

The protection needs for grizzlies and/or their habitat will be considered in all timber and fire management programs (FSM 2606.23). Proposed logging activities and associated road construction will be evaluated to assure protection of grizzlies and/or their habitat.

3. Range Management

Domestic livestock grazing in grizzly use areas is an acceptable practice if done under approved allotment management plans reflecting sensitivity for the ecological needs of the grizzly. Important habitat for grizzlies will be protected in all range management and improvement programs (FSM 2602.11).

4. Recreation Management

The protection needs for grizzlies and/or their habitat will be considered in providing for recreation use. Development of any recreation facilities or activities detrimental to grizzlies or to their important habitat will be deferred (FSM 2606.12).

5. Minerals, Watershed, and Special Uses Management

The protection needs of grizzlies and/or their habitat will be considered in all watershed management programs (FSM 2606.14), and in all mining and special use administration activities which have the potential to affect grizzlies and/or their habitat. Grizzly habitat and grizzly-human conflict potential will be evaluated fully in administering and evaluating applications or proposals for:

a. mining activities involving minerals, gas and oil, and geothermal exploration and production;

b. water developments;

c. resorts and summer homes under special use permits;

d. all other special use and nonspecial use activities (FSM 2700) which affect or have the potential to affect grizzlies and/or their habitat.

6. The protection needs of grizzlies and/or their habitat will be considered in engineering, forest insect and disease control, and landownership adjustment activities (FSM 2606.32, 2606.24, and 2606.31).

7. An environmental analysis shall be made for all policies, plans, programs and projects affecting resources, or other land uses, or the quality of the physical, biological, economic, and social environment (FSM 1940.3). Management Direction and Management Guidelines contained in "Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area" will be used as an information source and guidance in conducting environmental analyses to support Land and Resource Management Plans and specific projects.

*See glossary - Page 65

IV. GRIZZLY BEAR MANAGEMENT SITUATIONS*

Five different grizzly management situations are described for the Greater Yellowstone Area. All National Forest and National Park lands will be identified by appropriate situations (Figure 2, page 53). Each management situation fits a type of land area where unique:

1. grizzly populations and habitat conditions exist; and,

2. management direction applies.

Forest Supervisors and Park Superintendents will identify the different management situation areas in their respective areas of responsibility.

A. Management Situation 1

1. Population and habitat conditions The area contains grizzly population centers (areas key to the survival of grizzlies where seasonal or year-long grizzly activity, under natural, free-ranging conditions is common*) and habitat components needed for the survival and recovery of the species or a segment of its population. The probability is very great that major Federal activities or programs may affect (have direct or indirect relationships to the conservation and recovery of) the grizzly.

2. Management direction Grizzly habitat maintenance and improvement (improvement applies to Forest Service only), and grizzly-human conflict minimization will receive the highest management priority (FSM 2603). Management decisions will favor the needs of the grizzly bear when grizzly habitat and other land use values compete. Land uses which can affect grizzlies and/or their habitat will be made compatible with grizzly needs or such uses will be disallowed or eliminated. Grizzly-human conflicts will be resolved in favor of grizzlies unless the bear involved is determined to be a nuisance.* Nuisance bears may be controlled through either relocation or removal but only if such control would result in a more natural free-ranging grizzly population and all reasonable measures have been taken to protect the bear and/or its habitat (including area closures and/or activity curtailments).

B. Management Situation 2

1. Population and habitat conditions The area lacks distinct grizzly population centers; highly suitable habitat does not generally occur, although some grizzly habitat components exist and grizzlies may be present occasionally. By definition, management situation 2 areas are those considered unnecessary for species survival and recovery, although the status of such areas is subject to review and change according to demonstrated grizzly population and habitat needs. The effects of major Federal activities or programs on the conservation and recovery of the species are not generally predictable.

2. Management direction The grizzly bear is an important but not the primary use on the area. Habitat maintenance and improvement, and grizzly-human conflict minimization may be, in some cases, important, but not the most important management considerations. Demonstrated grizzly populations and/or grizzly habitat use will be accommodated in other land use activities if feasible, but not to the extent of exclusion of other use needs. A feasible accommodation is one which is compatible with (does not make unobtainable) the major goals and/or objectives of other uses. When grizzly population and/or grizzly habitat use and other land use needs are mutually exclusive, the other land use needs will prevail in management considerations. If grizzly population and/or habitat use represents demonstrated needs that are so great (necessary to the normal needs or survival of the species or a segment of its population) that they should prevail in management considerations, then the area should be reclassified under Management Situation 1. Nuisance grizzlies will be controlled.

C. Management Situation 3

1. Population and habitat conditions Grizzly presence is possible but infrequent. Developments, such as campgrounds, resorts or other high human use associated facilities, and human presence result in conditions which make grizzly presence untenable for humans and/or grizzlies. There is a high probability that major Federal activities or programs may affect the species' conservation and recovery.

2. Management direction Grizzly habitat maintenance and improvement are not management considerations. Grizzly-human conflict minimization is a high priority management consideration. Grizzly bear presence and factors contributing to their presence will be actively discouraged. Any grizzly involved in a grizzly-human conflict will be controlled. Any grizzly frequenting an area will be controlled.

*See glossary - Page 65

D. Management Situation 4

1. Population and habitat conditions Grizzlies do not occur in the area but habitat and human conditions make the area potentially suitable for grizzly occupancy, and the area is needed for the survival and recovery of the species. The probability is very great that major Federal activities and programs may affect the species' conservation and recovery.

2. Management direction The grizzly bear is an important potential use on the area. Grizzly habitat maintenance and improvement are important management considerations. Grizzly-human conflict minimization is not a management consideration. Habitat and human conditions making the area suitable for grizzly occupancy will not be degraded pending decisions regarding reestablishment of grizzlies.

E. Management Situation 5

1. Population and habitat conditions Grizzlies do not occur, or occur only rarely in the area. Habitat may be unsuitable, unavailable, or suitable and available but unoccupied. The area lacks survival and recovery values for the species or said values are unknown. Major Federal activities and programs probably will not affect species conservation and recovery.

2. Management direction Consideration for grizzly bears and their habitat in other resource related decisions is not directed. Maintenance of grizzly habitat is an option. Any grizzly involved in a grizzly-human conflict will be controlled.

V. GRIZZLY BEAR MANAGEMENT GUIDELINES

Grizzly management guidelines for each of five resource management systems are listed for each management situation. The guidelines are grouped under the headings:

1. Maintain and Improve (NF) Habitat;

2. Minimize Grizzly-Human Conflict Potential; and,

3. Resolve Grizzly-Human Conflicts.

The heading subjects are the major grizzly management objectives.

GUIDELINES ARE SUBJECT TO CHANGE AS RESEARCH PROVIDES ADDITIONAL DATA AND/OR MANAGEMENT DIRECTIVES CHANGE.

GRIZZLY BEAR MANAGEMENT GUIDELINES

MANAGEMENT SITUATION: 1

MGMT. SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Wildlife Management	1. Maintain close contact with research organizations to assure that current research data are being used in resource planning and administration affecting grizzlies. NF, NP.	→ 1.*	Line Officers will be provided with instructions for: (1) fact finding, including: (a) determination of where, why, when, and how the conflict occurred; (b) who was involved, (c) determination of status of problem bear (nuisance or nonnuisance) considering unnatural food dependency and individual bear history, see Appendix, page (2) grizzly control, including names and phone numbers of personnel from state wildlife management agencies and the U.S. Fish and Wildlife Service, page 57. (3) live trapping; (4) tranquilization; (5) removal, including carcass disposal; (6) relocation, including maps of specific recommended relocation sites. Relocation plans with implications for both National Parks and National Forests will be reviewed and agreed upon by Park Service, and state wildlife management personnel. NF, NP.
	2. Complete a biological assessment (may use U.S. Forest Service (1977) procedures) of existing or proposed land uses (under the Recreation, Range, Timber and Fire and Minerals, Watershed and Special Uses Management Systems) which could affect grizzlies and/or their habitat. NF, NP.	→ 2.	
	3. Initiate consultation procedures with the U.S. Fish and Wildlife Service, as necessary, if the biological assessment results in a "may affect" determination. BLM should initiate consultation related to mineral leasing. NF, NP.	→ 3.	
	4. With full awareness of the Biological Opinion, recommend project or land use modifications which will provide compatibility between grizzly bears and other land uses without degrading conditions for grizzlies. If projects or land uses cannot be made compatible, recommend project or use elimination. NF. NP.	→ 4.	
	5. With full awareness of the Biological Opinion, specify measures to be taken within the different resource management systems which will protect, maintain and improve (NF) grizzly bear populations and habitat. NF, NP.	→ 5.	
	6. With full awareness of the Biological Opinion, specify measures, to be taken independent of other resource management systems, to improve grizzly bear	→ 6.	

* Arrows indicate that measures under MAINTAIN AND IMPROVE HABITAT also apply to MINIMIZE GRIZZLY-HUMAN POTENTIAL.

GRIZZLY BEAR MANAGEMENT GUIDELINES

MANAGEMENT SITUATION: 1

MGMT. SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Wildlife Management (Continued)	management. For example, inform the public of National Forest and National Park grizzly bear management goals and objectives. Enlist their support in meeting these goals and objectives. NF, NP.		
	7. Monitor the application of these guidelines to assure they are properly and effectively used. Recommend improvements in guidelines and application procedures. NF, NP.	7. Identify grizzly-human conflict potential within the different resource management systems and recommend measures to minimize conflict potential. NF, NP.	
Timber and Fire Management	1. All proposed logging and burning activities will be evaluated for their effects upon grizzlies and/or their habitat. U.S. Forest Service procedures (1977) may be used. NF, NP (burning) (see Wildlife Management, above).	→ 1.	In cases of grizzly-human conflict, District Rangers in cooperation with state wildlife management agencies will immediately identify the cause by determining where, why, when, and how the conflict occurred. If the problem bear is not determined to be a nuisance then correct the problem immediately by removing the man-related cause. Likely man-related causes are grizzly attractants and/or human activities interfering with grizzly use of habitat. Attractants include food and food odors associated with man, livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, camps or other dwellings, game meat in possession of man, and transportation and/or work livestock. Interference activities are those associated with logging or burning or fire control (camps) which disrupt grizzlies, grizzly habitat and/or grizzly use of habitat. Cause removal could involve simple activity modification or temporary or permanent activity curtailment. If the problem bear is determined to be a nuisance and all reasonable measures have been taken to protect the bear and its habitat and a more natural grizzly population would be a likely result of its control, the U.S. Fish and Wildlife Service and state wildlife agencies will be requested to exercise control. See Appendix, page 57 for guidelines for determining grizzly nuisance status and for controlling nuisance grizzlies.
	2. Timber sale and fire management EAR's will specify National Forest and National Park grizzly management goals and objectives and measures to meet them. Contracts will include specific measures to protect, maintain and/or improve grizzly habitat and meet grizzly management goals and objectives. Timber sale contracts will include a clause providing for cancellation of temporary cessation of activities if such are needed to resolve a grizzly-human conflict situation. Contractors' full cooperation in meeting grizzly management goals and objectives will be a condition to their receiving and holding contracts. NF, NP (burning).	→ 2.	
	3. Logging and/or fire management activities which will adversely affect grizzly bear populations and/or their habitat will not be permitted. Adverse population effects are population reductions and/or grizzly habituation.*	→ 3.	

* See glossary - Page 65

MANAGEMENT SITUATION: 1

MGMT. SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Timber and Fire Management (Continued)	Adverse habitat effects are reductions in habitat quantity and/or quality. NF, NP (burning). 4. Grizzly habitat will be improved through vegetation manipulation. Silvicultural treatment, sale area improvement and managed burning are the methods to accomplish manipulation. NF. (a) Silvicultural Treatment In some habitat types (Pfister et al, 1977) in grizzly range, timber harvest, especially selection and group selection cuts and small clearcuts with no dozer piling of slash and no mechanical soil scarification, produces important amounts of herbs and shrubs bearing fruits eaten by grizzlies. Production of grizzly food species in these cuts is often greater than in uncut sites in the same habitat types. This indicates that certain timber harvest practices can be used in some forest stands to increase their grizzly food value. It also indicates that grizzly habitat quality can probably be increased or enhanced by creating openings producing high quality grizzly food facilitating greater grizzly use in forest habitat types where normal grizzly use appears light. Habitat types for possible treatment are subalpine fir/huckleberry, (ABLA/VAGL, and ALBA/VASC), spruce/horse tail (PICEA/EQAR), spruce/sweetscented bedstraw, (PICEA/GATR), and subalpine fir/bluejoint (ALBA/CACA).	4. Logging and burning activites will occur at a time or season when the area is of little or no biological importance to grizzles. Where winter logging is infeasible, summer logging operations will be restricted in time and space to prevent significant disruptions of normal or expected grizzly activities. NF.	

GRIZZLY BEAR MANAGEMENT GUIDELINES

MANAGEMENT SITUATION: 1

MGMT.SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Timber and Fire Management (Continued)	Others may be identified through future studies. Actual site specific vegetation responses will dictate the specific type of treatment and plant association to be treated. In general, grizzly habitat management in forested cover should provide a balance of all successional stages on a sustained yield, even-flow basis. Composition and coverage of grizzly food sources in clearcuts which have been broadcast burned and are without extensive soil scarification are comparable to those of natural burns. This indicates that such man-made openings can become the vegetative equivalent of burns, some of which produce important grizzly foods. Group selection cuts and 10-20 acre irregularly shaped clearcuts, in which prescribed fire slash removal is used to duplicate wildfire, appear desirable for creating high grizzly food producing openings. Desirable clearcut features include: (1) one or more leave or cover patches in cuts over 10 acres (2) minimum soil scarification in habitat types where soil disturbance impedes the reestablishment of grizzly foods (20 percent or less, preferably in a strip configuration), (3) slash disposal by spring broadcast burning in suitable habitat types and terrain or possibly no slash disposal and (4) protection of hydric stream bottoms, wet meadows, marshes and bogs from soil disturbance and security		

MANAGEMENT SITUATION: 1

MGMT.SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Timber and Fire Management (Continued)	cover removal. Yarding methods should be designed to minimize soil disturbance, single end log suspension appears desirable. Access to harvest areas during and after treatment should be managed to minimize the potential for disturbance of grizzlies. Disturbance resulting from unmanaged road use could negate the habitat improvement value of man-made openings. (b) Sale area improvement Timber sale receipts, collected for post-sale area improvement (Knudsen-Vandenberg Act funds) should be used, when practical, to enhance the grizzly habitat quality of a logged area. Reforestation could be used to establish cover patches in cut blocks and supplemental cover screens for wet meadows, marshes, bogs, ponds, and other riparian areas. Revegetation with native grasses, forbs, and shrubs could be used to establish natural grizzly foods on appropriate, denuded sites. Riparian areas could be restored, maintained, improved, or increased through revegetation and reforestation which could favorably affect water tables and result in stream stabilization and/or water spreading. (c) Managed burning Some grizzlies appear to derive much of their energy from the fruits of shrubs, including huckleberry and buffaloberry. Burns resulting from wildfires in this century are important producers of fruiting shrubs which provide grizzly food energy.		

MANAGEMENT SITUATION: 1

MGMT.SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Timber and Fire Management (Continued)	Natural fire frequency appears necessary to maintain or expand burn components. Outside of wilderness areas, prescribed burning in habitat types which are not suitable for timber production could help to approximate a natural fire frequency. Fire management planning within wilderness areas, which would allow wildfires to burn within certain areas and conditions, would be valuable in improving habitat. Forest components known to have the greatest potential for improvement include the whitebark pine/subalpine fir, (PIAL/ABLA), and subalpine fir/huckleberry, (ABLA/VAGL and ABLA/VASC) habitat types. 5. Silviculture treatments will be designed to maintain or favor a mature, cone producing stand of whitebark pine where it exists within a sale. Generally, whitebark pine should not be marked for cutting unless it is expected to die before the next cutting entry. NF.	5. Grizzly habitat enhancement through silvicultural treatment, sale area improvement or managed burning will not be done in close proximity to private property, resorts, campgrounds, summer homes, other recreation sites or areas which could bring grizzlies in contact with humans. NF. 6. All roads used for timber sale purposes will be single purpose roads only, and will be closed to public use not associated with timber sale operation and administration. NF. Exceptions to this could be: (a) seasonal closures if data show grizzlies' use of the area to be seasonal and the road facilitates other important resource use that would not be possible without the road;	

GRIZZLY BEAR MANAGEMENT GUIDELINES

MANAGEMENT SITUATION: 1

MGMT.SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Timber and Fire Management (Continued)		(b) roads could be open for short periods, such as for hunting seasons and wood gathering if human use is of short duration. 7. Timber sale operators and their employees will be informed of possible risks any time they are working in grizzly country. NF. 8. Temporary living facilities for timber sale operators will be closely regulated. Edibles and/or garbage will not be allowed to accumulate or be available for grizzlies. Bear proof refuse containers and refuse collection to prevent overflow will be required. Requirements will be included in sale contracts. NF. 9. In fire camps, measures will be taken to avoid attracting grizzlies. Proper food storage and refuse disposal will be required. No edibles or garbage will be left after suppression or management efforts have ended. NF,NP.	
Range Management	1. All livestock use on allotments, including recreation horse allotments, will be evaluated for its effect upon grizzlies and/or their habitat. U.S. Forest Service procedures (1977) may be used. NF, NP. (See Wildlife Management, above.) 2. The allotment management plan will specify measures to meet National Forest and National Park grizzly management goals and objectives. These measures will be reflected in grazing permits and annual permittee plans. All permits will include a	1. 2.	In cases of grizzly-human conflict or grizzly-livestock depredation, District Rangers in cooperation with state wildlife management agencies, will immediately identify the cause by determining where, when, why, and how the conflict occurred. If the problem bear is not determined to be a nuisance then correct the problem immediately by removing the man-related cause. Likely man-related causes are grizzly attractants and/or activities interfering with grizzly use of habitat. Attractants include foods and food odors associated with man, domestic livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, camps or other dwellings.

MANAGEMENT SITUATION: 1

MGMT. SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Range Management (Continued)	clause providing for cancellation or temporary cessation of activities if such are needed to resolve a grizzly-human conflict situation. Permittees' full cooperation in meeting grizzly management goals and objectives will be a condition to their receiving and holding permits. NF, NP.		game meat in possession of man, and domestic and/or transportation livestock. Interference activities are domestic livestock and/or any other livestock operation activity disrupting the grizzly's natural activities in meeting its biological requirements (i.e., food use in wet areas with succulent, herbaceous vegetation which is scarce and thereby vitally important to the species especially during dry years or in late summer and autumn). Cause removal could involve simple activity modification or temporary or permanent activity curtailment in deference to seasonal or year-long grizzly use needs.
	3. The allotment management plan will specify measures to protect in time and space, food production areas vitally important to grizzlies (i.e., wet alpine and subalpine meadows, stream bottoms, aspen groves and other riparian areas) from conflicting and competing use by domestic livestock. These measures will be reflected in grazing permits and annual permittee plans. Degrees of protection could range from partial to full protection as indicated by evaluation. Measures could include, but not be limited to, closing grazing units either temporarily or permanently, exclusion fencing, changing on and off dates and setting livestock utilization rates at levels compatible with grizzly needs. Range condition class objective will be good to excellent in order to achieve range conditions favorable to grizzlies. NF. NP.	→ 3.	If the problem bear is determined to be a nuisance and all reasonable measures have been taken to protect the bear and its habitat and a more natural grizzly population would be a likely result of its control, the U.S. Fish and Wildlife Service and state wildlife agencies will be requested to exercise control. See Appendix, page 57 for guidelines for determining grizzly nuisance status and for controlling nuisance grizzlies. NF.
	4. On sheep allotments where grizzly-livestock depredation has been authenticated, adjustments will be made for the primary purpose of grizzly bear conservation. The following options are available: (a) change the season of use, bedding practices or grazing area, to avoid known problem areas or other habitat important to grizzlies in time and space.	→ 4.	

GRIZZLY BEAR MANAGEMENT GUIDELINES

MANAGEMENT SITUATION: 1

MGMT. SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Range Management (Continued)	(b) change the class of livestock from sheep to cattle if the range is suitable for cattle; (c) remove all livestock and close the allotment. Vacant sheep allotments will be restocked only after the allotment has been evaluated, using USFS procedures (1977) to determine grazing compatability with grizzly habitat requirements. 5. Grazing activities which will adversely affect grizzly bear populations and/or their habitat will not be permitted. Adverse population effects are population reductions and/or grizzly habituation. Adverse habitat effects are reductions in habitat quantity and/or quality. NF, NP.	5. The allotment management plan will specify measures for the timely removal, destruction or treatment of livestock carcasses to avoid habituation of grizzlies to livestock carrion as food. The intent is to reduce the availability of unnatural food, reduce the liklihood of food association with domestic herds and reduce opportunities for depredation. Allotment plans will require that all human and prepared livestock and pet foods and human refuse associated with livestock operations be made unavailable to grizzlies through proper storage, handling, and disposal. Edibles and/or garbage should not be allowed to accumulate; sight and/or smell of edibles and/or garbage should not be dominant (i.e., food should be canned or in other sealed containers) and edibles and/or garbage should be made unavailable (hung out of reach, secured in a solid-sided-bear-proof-structure, burned or packed out). These measures will be specified in the annual permittee plan and grazing permits. NF, NP.	

GRIZZLY BEAR MANAGEMENT GUIDELINES

MANAGEMENT SITUATION: 1

MGMT. SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Recreation Management	1. The following uses, developments or activities will be evaluated (USFS, 1977) to determine their compatibility with grizzly habitat requirements: (a) proposed roads; (b) proposed trails (foot, horse, snowmobile and ski) and existing trails with frequent grizzly-human encounters. (c) proposed campgrounds, designated campsites, picnic areas, visitor information facilities and other facilities and structures for recreation or administrative use; (d) any or all in (c) above which exist and have a history of grizzly-human encounters; (e) existing and proposed special-use resorts, cabins, and outfitter pack and saddle stock grazing areas; (f) areas used for grazing by noncommercial recreation livestock; and (g) existing or proposed outfitter special use camps. Existing or proposed activities or uses which will adversely affect grizzly populations and/or their habitat will be terminated, removed, relocated or denied. Adverse population effects are population reductions and/or grizzly habituation. Adverse habitat effects are reductions in habitat quantity and/or quality. NF, NP.	→ 1.	In cases of grizzly-human conflict, District Rangers, in cooperation with state wildlife management agencies, will immediately identify the cause by determing where, why, when, and how the conflict occurred. If the problem bear is not determined to be a nuisance then correct the problem immediately by removing the man-related cause. Likely man-related causes are grizzly attractants and/or human activities interfering with grizzly use of habitat. Attractants include foods and food odors associated with man, livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, camps or other dwellings, game meat in possession of man, and transportation and/or domestic livestock. Interference activities are those associated with recreation activities (transportation livestock grazing, camping, trail and road access, etc.) which disrupt grizzlies, grizzly habitat and/or grizzly use of habitat Cause removal could involve simple activity modification or temporary or permanent activity curtailment or access closure. If the problem bear is determined to be a nuisance and all reasonable measures have been taken to protect the bear and its habitat and a more natural grizzly population would be a likely result of its control, the U.S. Fish and Wildlife Service and state wildlife agencies will be requested to exercise control. See Appendix, page 57 for guidelines for determining grizzly nuisance status and for controlling nuisance grizzlies. NF.
	2. All recreation oriented EAR's and concessionaire special use permits will specify measures to meet National Forest and National Park grizzly	→ 2.	

MANAGEMENT SITUATION: 1

MGMT. SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Recreation Management (Continued)	management goals and objectives. Permits will include a clause providing for cancellation or temporary cessation of activities if such are needed to resolve a grizzly-human conflict situation. Permittees' full cooperation in meeting grizzly management goals and objectives will be a condition to their receiving and holding permits. NF, NP.		
	3. Special care will be taken to assure that camping and/or grazing activities will not degrade or compromise important grizzly use areas (forage sites, denning areas or travel routes). Nf, NP.	3. In developed recreation sites, bear-proof garbage containers will be used with regularly scheduled garbage removal (to prevent overflow). All human and prepared livestock and pet food and human refuse will be made unavailable to grizzlies through proper storage, handling, and disposal as defined under Range Management, page 13. Carcasses of livestock and wildlife along major highways will be destroyed or removed immediately. To accomplish this in National Forests, District Rangers will notify State Highway Departments for removal of carcasses of animals larger than deer. NF, NP.	
	4. Special care will be taken to assure that trail and road construction does not degrade important grizzly use areas. NF, NP.	4. For dispersed recreation use a "Pack-In-Pack-Out" refuse policy will be enforced. All human and prepared livestock and pet foods and human refuse will be made unavailable to grizzlies through proper storage, handling, and disposal. Carcasses of livestock and wildlife along roads and trails will be destroyed, removed, or treated as soon as practical to repel grizzlies. NF, NP. 5. Open garbage dumps will not be permitted. NF, NP.	

MANAGEMENT SITUATION: 1

MGMT. SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Recreation Management (Continued)		6. Resort operators under special use will use bear-proof garbage containers and make regular collections from all containers. NF, NP. 7. All human and prepared livestock and pet foods and human refuse associated with outfitter operations will be made unavailable to grizzlies through proper storage, handling, and disposal. A "Pack-In-Pack-Out" refuse policy will be enforced. NF, NP. 8. Outfitters and all other hunters will be required to hang game meat at least 100 yards from camp. Game meat more than 800 yards from camp need not be hung. Meat will be hung so that the lowest portion of the carcass is suspended ten vertical feet above the highest ground object and three horizontal feet from the nearest lateral object. Suspension ropes should be tied off six feet or higher to trees or objects other than those supporting the meat pole. NF, NP. 9. Hunters and outfitters will be encouraged to keep game meat in camp vicinity no longer than 48 hours. NF, NP. 10. No permits will be issued for the baiting of bears for purposes of sport hunting. NF, NP. 11. Use of established campsites will be adjusted as necessary to prevent a buildup of odors or improperly handled garbage which could attract grizzlies. NF, NP.	

MANAGEMENT SITUATION: 1

MGMT.SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Recreation Management (Continued)		12. An information brochure summarizing recommended human conduct in grizzly country will be made available to the public. NF, NP. 13. Dogs will not be permitted. NP. 14. Feeding of bears will not be permitted. NF, NP. 15. Signs identifying grizzly range and recommended human conduct within, will be placed at trailheads, developed campgrounds, and backcountry campsites. NF, NP. 16. Grizzly bear trapping sites will be temporarily closed to human use. NF, NP. 17. Trails and roads accessing areas with histories of grizzly-human encounters or areas where such encounters are probable or likely will be closed to human use either temporarily or permanently as necessary to reduce conflict potential. NF, NP.	
Minerals, Watershed, and Special Uses Management	1. Proposed activities referenced in application or proposals for (a) mineral, gas and oil, and geothermal exploration and development, (b) water developments, (c) new resorts and/or resort expansion, (d) all uses which require no special use permits (FSM 2708) which are likely to affect grizzlies and/or their habitat will be evaluated. U.S. Forest Service (1977) procedures may be used. NF, NP.	1.	In cases of grizzly-human conflict, District Rangers in cooperation with state wildlife management agencies, will immediately identify the cause by determining where, why, when, and how the conflict occurred. If the problem bear is not determined to be a nuisance then correct the problem immediately by removing the man-related cause. Causes are grizzly attractants and/or human activities interfering with grizzly use of habitat. Attractants include foods

MANAGEMENT SITUATION: 1

MGMT. SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Minerals, Watershed and Special Uses Management (Continued)	2. All operating plans and special use permits will specify measures to meet National Forest and National Park grizzly management goals and objectives. Permits will include a clause providing for cancellation or temporary cessation of activities if such are needed to resolve a grizzly-human conflict situation. Permittees', lessees', and operators' full cooperation in meeting grizzly management goals and objectives will be a condition to their receiving and holding approved permits and plans. NF, NP.	→ 2.	and food odors associated with man, livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, camps or other dwellings, game meat in possession of man, and transportation and/or work livestock. Interference activities are those associated with mining, watershed development, and special uses which disrupt grizzlies, grizzly habitat and/or grizzly use of habitat. Cause removal could involve simple activity modification or temporary or permanent activity curtailment. If the problem bear is determined to be a nuisance and all reasonable measures have been taken to protect the bear and its habitat and a more natural grizzly population would be a likely result of its control, the U.S. Fish and Wildlife Service and state wildlife agencies will be requested to exercise control. See Appendix, page 57 for guidelines for determining grizzly nuisance status and for controlling nuisance grizzlies. NF.
	3. Activities which adversely affect grizzly bear populations and/or their habitat will not be permitted. Adverse habitat effects could result from (a) land surface disturbances, (b) water table alterations, (c) reservoirs, rights-of-way, roads pipelines, canals, transmission lines, or other structures, (d) increased human foods, and (f) reduced availability of natural foods. Areas of vital importance to grizzlies are identified through the evaluation process (USFS, 1977). NF, NP.	3. Operation plans and special use permits will specify food storage and handling and garbage disposal standards. The general rule will be that all grizzly attractants, as defined under conflict resolution will be made unavailable to grizzlies. NF, NP.	
	4. Operating plans and special use permits will include specific measures to protect and maintain grizzly habitat. Measures will address items a-f under 3 above, and others as necessary. NF, NP.	→ 4.	
	5. Mineral exploration and/or development activities will occur at a time or season when the area is of little or no biological importance to grizzlies. NF.	5. Operation plans and special use permits will specify food storage and handling and garbage disposal standards. The general rule will be that all grizzly attractants, as defined under conflict resolution will be made unavailable to grizzlies. NF, NP.	

GRIZZLY BEAR MANAGEMENT GUIDELINES

MANAGEMENT SITUATION: 1

MGMT. SYSTEM OR ACTIVITY	MAINTAIN AND IMPROVE HABITAT	MINIMIZE GRIZZLY-HUMAN CONFLICT POTENTIAL	RESOLVE GRIZZLY-HUMAN CONFLICTS
Minerals, Watershed, and Special Uses Management (Continued)	6. All waste water associated with drilling operations will be disposed of in a manner approved by the District Ranger. NF. 7. Integrity of aquatic system and riparian zones will be maintained. If these areas are polluted and/or damaged from activities associated with mineral exploration and/or development, lessee will assume full responsibility for rehabilitation and restoration of such areas. NF. 8. Roads, drilling pads, and other areas denuded from mineral exploration and development activities will be revegetated and reclaimed by lessee as directed by the District Ranger. NF.	6. Temporary living facilities for exploration and/or development personnel will be on-site or at an alternate site designated by the District Ranger. NF. 7. Feeding of bears will not be permitted. NF. 8. Reserve pits will be fenced and flagged. NF. 9. Roads constructed for mineral exploration and/or development will be single purpose roads only and will be closed to public use not associated with mineral activities. Exception to this could be seasonal closure if data shows grizzly use of the area or habitat to be seasonal. NF.	

Appendix 2

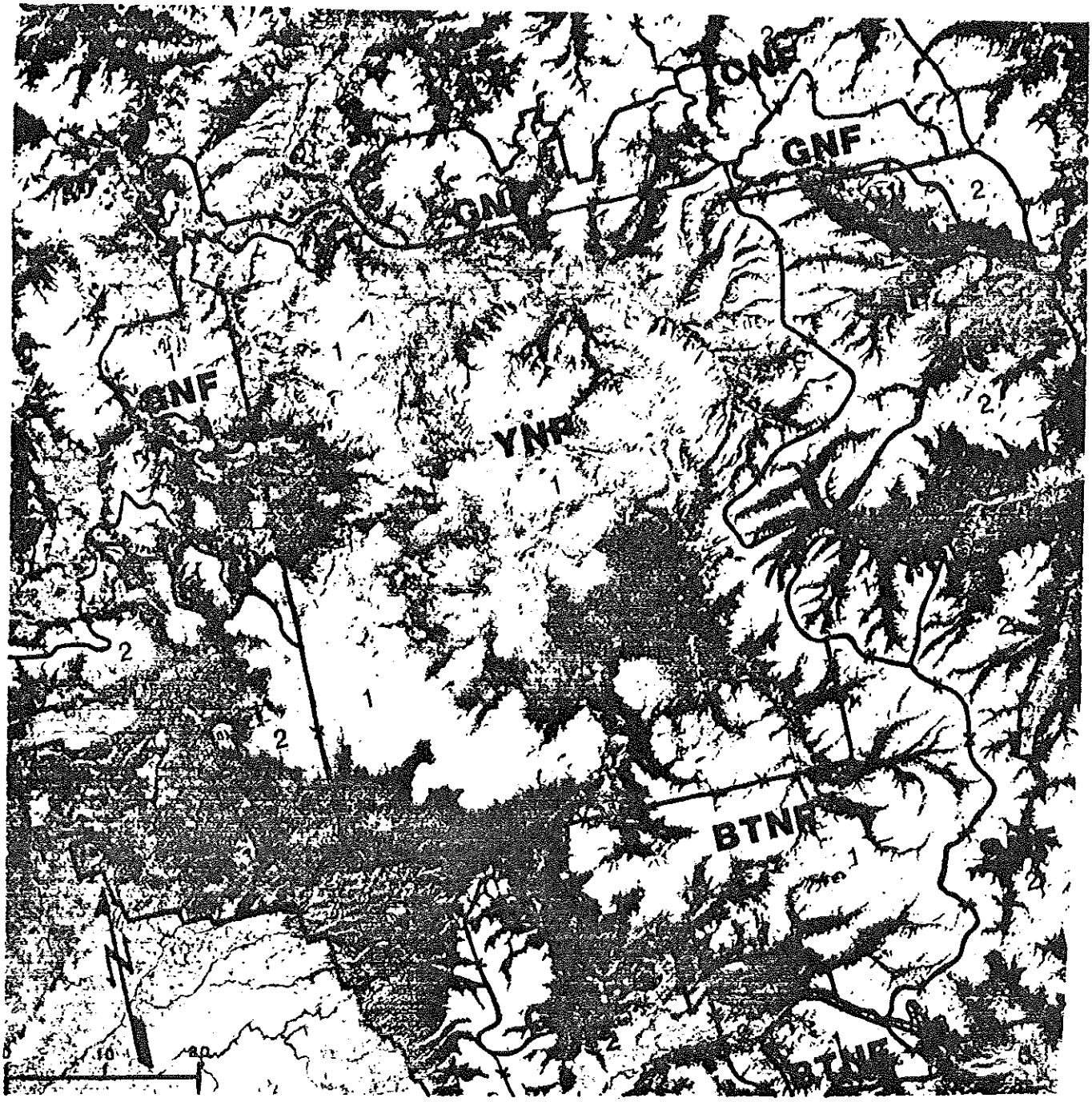


Figure 2. General representation of management situation areas in National Forests and National Parks in the Greater Yellowstone area.

(Detailed delineations are available at the respective agency's headquarters, see page 136).

OPTIONAL FORM NO. 10
JULY 1973 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

APPENDIX D

TO : Regional Director, National Park Service, Rocky Mountain Region, Denver, CO

DATE: June 18, 1982

FROM : Acting Area Manager, Fish and Wildlife Service, Billings, MT (SE

SUBJECT: Section 7 Consultation -- Grizzly Bear Management Program, Yellowstone National Park (6-1-82-F-006)

This is the Fish and Wildlife Service's (FWS) biological opinion prepared in response to your March 17, 1982, request for formal consultation on the effects the Yellowstone National Park Grizzly Bear Management Program (Alternative A of the draft EIS) will have on the threatened grizzly bear (Ursus arctos horribilis). The FWS has examined the proposed program in accordance with Section 7 Interagency Cooperation Regulations (50 CFR 402, 43 FR 870) and the Endangered Species Act as amended. This biological opinion refers only to the potential effects on the grizzly bear and not the overall environmental acceptability of the proposed action.

Biological Opinion

It is the Service's biological opinion that the Yellowstone Grizzly Bear Management Program will promote the conservation of the grizzly bear. This opinion is restricted to the management actions outlined in the present grizzly bear management program. It does not cover research or management programs that may be proposed in the future.

Project Description

The National Park Service proposes to continue to implement an ongoing grizzly bear management program, the purpose of which is to perpetuate a wild, free-ranging grizzly bear population in Yellowstone National Park and minimize conflicts between humans in the Park and grizzly bears by reducing human-generated food sources and by regulating visitor distribution in the Park.

5010-110

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

Basis of Opinion

The Yellowstone Grizzly Bear Management Program is based on the premise that if unnatural foods are eliminated from the diet of the bear, conflicts with people will be avoided resulting in fewer management control actions. Thus, management induced mortality will be reduced to a minimum. The current management program has evolved since the closure of the open garbage pit dumps in 1970, and has not been an abrupt development just recently implemented. Thus, nearly 12 years of data are available to evaluate the effects of management under the existing Yellowstone Bear Management Policy.

Recent analyses of the grizzly bear population in the Yellowstone ecosystem by the Interagency Grizzly Bear Study Team (IGBST) indicate a deteriorating population status -- nearly all of which can be related to man-caused mortality in the female segment of the population. "The Grizzly Bear Recovery Plan indicates, in part, that recovery for Yellowstone ecosystem grizzly bears may be judged accomplished when there is at least a sustained production equating to 25 females with an average young per year litter size of 2.2 cubs per female.

The IGBST reports a 6-year NORM for the period ending in Fiscal Year 1981 of 12.5 females with 1.9 cubs per female. The census efficiency is unknown, but may exceed 80 percent for females with young. There is strong indication that the numbers of females with cubs are declining. This trend corresponds with known female mortalities.

Age structure of the known population indicates a highly exploited population. Some initial calculation by L. L. Eberhardt (pers. comm. to Richard Knight, Leader, Interagency Grizzly Bear Team) indicates that a 96 percent survival of females in prime breeding ages will result in a slow increase in population, but that a 90 percent survival rate results in a steady decrease. Using only known man-caused mortalities for 1981, the survival rate was estimated at 87 percent (U.S.F.S. 1982)." Thus, reducing human-caused mortality, particularly in the female segment of the population, becomes highly significant in the efforts to recover the grizzly bear.

Management under the current Yellowstone Grizzly Bear Management Policy does not appear to be contributing excessive mortality to the population. Since 1970, 40 grizzlies have been removed from the population within park boundaries; an average of 3.3 bears per year. In the last six years (1976-1981), five grizzlies have been killed within the Park; an average of 0.83 bears per year (Table 1). Linear regressions correlating control actions (relocations and removals) with people/bear confrontations and grizzlies removed (killed) with people/bear confrontations show positive correlation coefficients ($r = .87$ and .81 respectively). Thus, a trend toward increased people/bear conflicts can be expected to result in increased management induced mortality. Trend-line analysis of people/bear confrontations (1970-1981) occurring under the Yellowstone

Bear Management Program, however, indicates a decreasing trend in bear/human conflicts (Figure 1, slope = -7.7; r = -.88). These analyses indicate that the excessive population mortality occurring in the Yellowstone population is attributable to factors outside the Park management program.

Despite the best management efforts to eliminate food-reward associations with people, we anticipate that there will always be a level of human/bear interaction creating the potential for confrontations and/or habituation and subsequent management control actions. Trend-line analysis using data for the years 1976 to 1981 in fact demonstrates that the negative slope of the line depicting a decrease in people/bear confrontations for the period 1970 - 1981 "flattens out" and that the degree of association between confrontations and time becomes less strong (Figure 2, slope = -3.37; r =-.62). Thus, availability of human foods and positive conditioning are only part of the problem faced by Park management.

A major concern for grizzly management in National Parks where there is a high level of bear/human interactions (creating the potential for habituation) is how to provide a form of negative conditioning to avoid habituation to people. The elimination of human-related foods in itself may not solve the problem of habituation. Restricting negative conditioning and favoring habituation by frequent innocuous contacts between people and bears (typical of park situations) can create problem bears without reinforcement by food per se (McCullough, 1982). Bears lacking fear of humans are dangerous in any context and close encounters between habituated bears and humans are more likely. Management to counteract this behavioral modification goes beyond traditional bear/people management. We believe that with increasing trends in backcountry use it is an area of bear management that requires serious consideration and attention of the National Park Service. If not addressed by management,behavioral changes associated with habituation to people may compromise the long-term preservation of grizzly bears in National Parks if they contribute to unacceptably high rates of bear/human conflicts (McArthur, 1980).

Aversive conditioning using nauseating compounds, electrical shocks, shooting with rock salt, etc. may have application but deserves and requires much research before using as a management technique. Positive measures taken under Section III H of the Yellowstone Operating Procedure, Bear Management Policy, however, can be immediately implemented to help minimize the problems of habituation and disturbance of bears in important foraging areas. Section III H states that "any area may be closed to human use and/or specific types of visitor activities for the

purpose of human safety and/or where the impact of man has a demonstrated adverse effect (emphasis added) on the bear population or bear habitat." Trail and backcountry camp site closures and restrictions of backcountry parties to four or more are presently being taken primarily to protect the public. Public closures, either seasonally or year-round, in high density bear use areas could also be taken for the purpose of protecting the bear from human disturbance and potential habituation to people. A bear habituates to other bears when such habituation gives it a return in resources, such as food, that outweighs the cost of the stress that precedes habituation. Similarly, bears may habituate to people when such habituation results in access to a source of natural food in the vicinity of human-use areas (McArthur 1980). Eliminating or reducing the level of human-use in key foraging areas at times when grizzlies are utilizing these areas appears to be positive measures to minimize or prevent habituation to people and subsequent human/bear conflicts.

We recommend that the Park Service expand their use of area closures to not only protect people but also to protect grizzlies from people. We suggest that backcountry users be prevented, not merely discouraged, from entering certain areas having high densities of grizzly bears. Seasonal concentration areas for grizzly bears can be identified and in some cases predicted. The elimination of human entry and disturbance at such sites will constitute positive management, not only to prevent human/bear conflicts but also to provide areas where grizzly bears can pursue natural behavioral patterns including feeding, resting, and social activities free of human disturbance. A procedure or methodology should be developed that would help indicate when the impact of people starts to have an adverse effect on the bear so that actions under Section III H could be implemented in a timely fashion. This may involve a monitoring procedure utilizing the present computerized grizzly bear observation system with modifications designed to detect behavioral changes in bears as a result of human encounters. Areas of high grizzly density have already been mapped by the IGBST where this form of management needs to be focused.

The cumulative effects of other Park actions also need to be considered by Park managers. In formulating this opinion, the scope of our analysis of cumulative effects is set by the August 27, 1981, Solicitor's opinion Associate Solicitor, Conservation and Wildlife, regarding cumulative effects to be considered under Section 7 of the Endangered Species Act. The Grant Village Development Project (Fish and Wildlife Service biological opinion issued October 26, 1979) falls within this scope of analysis. A major consideration in the formulation of our "no-jeopardy" biological

opinion for that project was that the facilities at Fishing Bridge would be phased-out under the Grant Village development proposal. Part of the Park Service rationale for the development of Grant Village is that development in this area with simultaneous phase-out of facilities at Fishing Bridge would remove human activities from an area extremely important to grizzlies (and which has a history of people/bear conflicts) to an area of lesser importance to bears where conflicts are expected to be lower. The Park Service commitment to the phase-out of facilities at Fishing Bridge was further confirmed by letter of January 26, 1981, from Park Superintendent John Townsley to Fish and Wildlife Service Area Manager Wally Steucke. A departure from these commitments would likely result in increased people/bear conflicts with resultant grizzly bear control actions. Formal consultation on the Grant Village proposal should be reinitiated should a departure from the phase-out of human activities as outlined in Mr. Townsley's January 26, 1981, letter be anticipated.

In summary, we conclude:

(1) Grizzly bear mortality under the Yellowstone Grizzly Bear Management Program is not contributing to the excessive mortality being inflicted upon the Yellowstone ecosystem population.

(2) Trend-line analyses of people/bear conflicts occurring under the Yellowstone Bear Management Program indicate that the program is achieving its objective in minimizing conflicts, thus reducing the need for management control actions.

(3) Management actions are being taken to minimize hazardous contacts and confrontations between people and grizzlies.

(4) Provisions exist in the bear management program to implement area closures to protect grizzlies from people, i.e. to minimize habituation of bears to people and to avoid disturbing/displacing bears from high use areas.

Thus, the Fish and Wildlife Service believes that the Yellowstone Grizzly Bear Management Program will help promote the conservation of the species.

This completes the Fish and Wildlife Service's biological opinion on the Yellowstone Grizzly Bear Management Program. Should significant changes be made in the program, consultation with the FWS should be reinitiated.

Sincerely,

John G. Wood
Acting Area Manager

Table 1. Bear incidents, Yellowstone National Park, 1970-1981

Year	Visitation	Personal Injuries		Property Damages (all bears)	Total Confrontations (all bears)	Control Actions (grizzlies only)	Grizzlies Removed from Population
		Griz	Black				
1970	2,297,290	3	6	89	98	70	20
1971	2,120,487	0	9	71	80	39	6
1972	2,246,827	3	5	87	95	26	7
1973	2,061,537	0	5	38	43	10	0
1974	1,937,768	0	7	29	36	14	2
1975	2,246,132	2	1	27	30	0	0
1976	2,525,174	4	4	23	31	15	1
1977	2,487,084	1	2	31	34	9	1
1978	2,623,141	0	1	13	14	2	2
1979	1,874,539	2	0	7	9	1	0
1980	2,018,848	1	0	12	13	4	1
1981	2,549,307	2	1	18	21	8	0

Source: Final Environmental Impact Statement, grizzly bear management plan

Figure 1

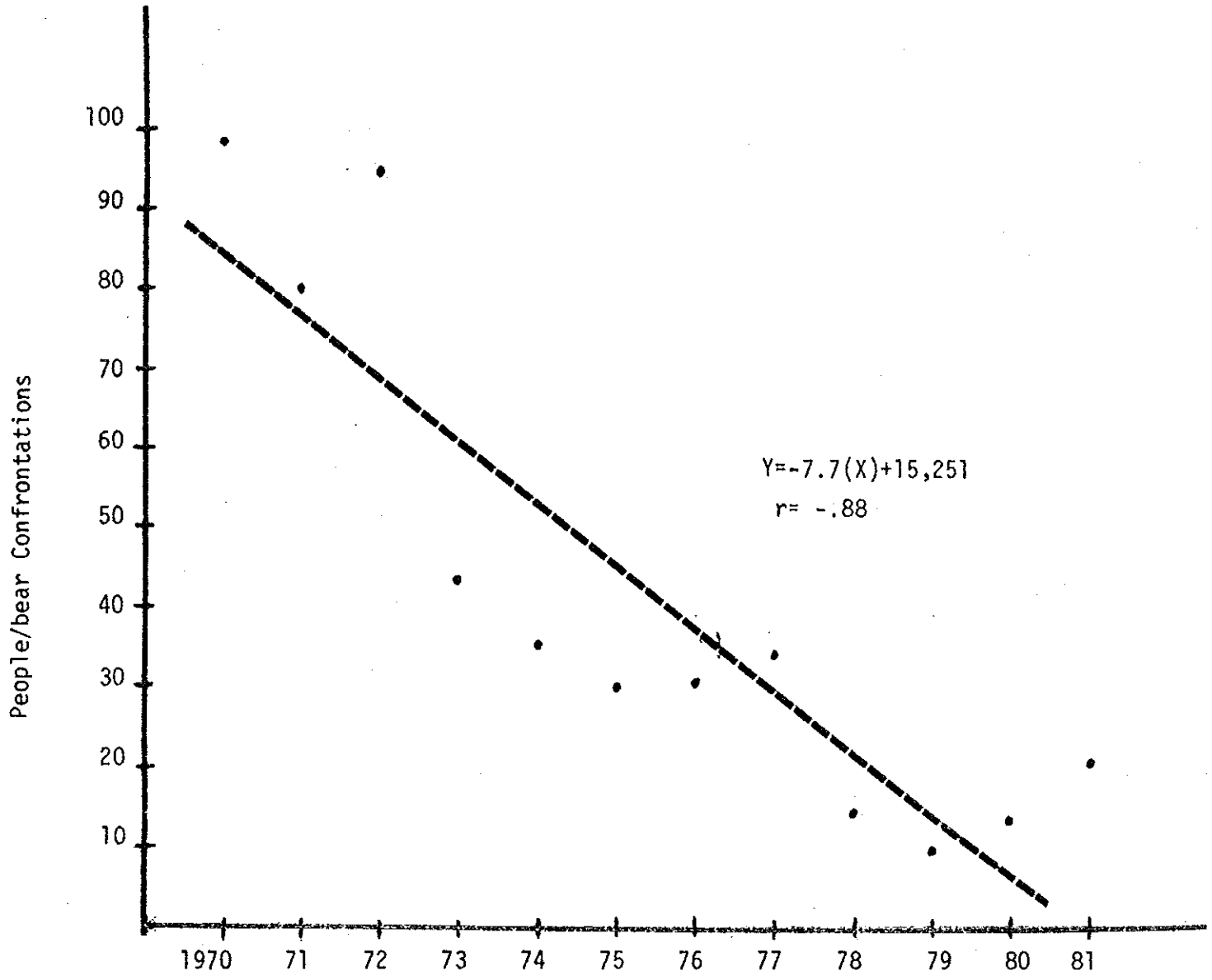
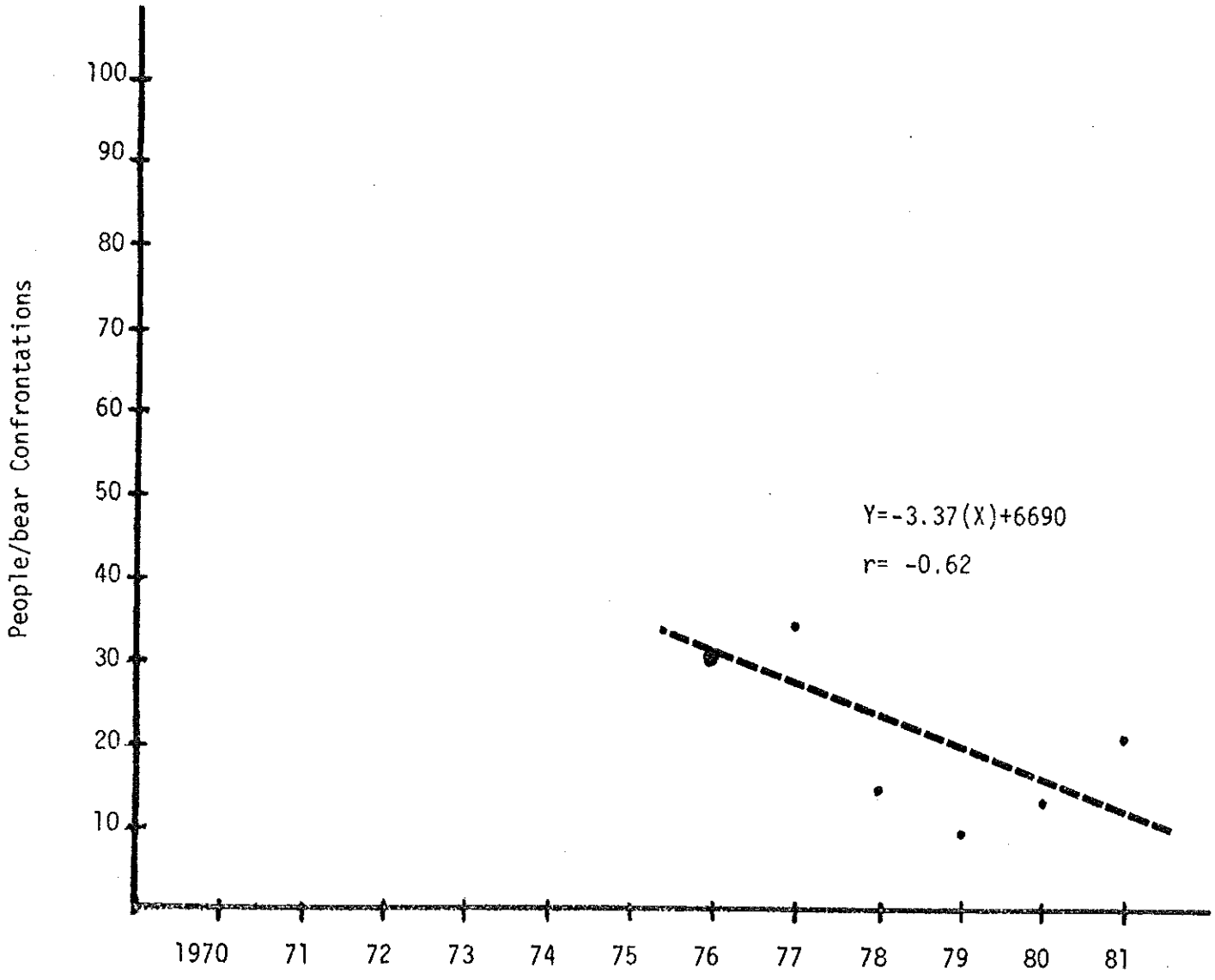

People/bear Confrontations
100
90
80
70
60
50
40
30
20
10
1970
71
72
73
74
75
76
77
78
79
80
81
Y=-7.7(X)+15,251
r= -.88

Figure 2


People/bear Confrontations
100
90
80
70
60
50
40
30
20
10
1970
71
72
73
74
75
76
77
78
79
80
81
Y=-3.37(X)+6690
r= -0.62

References Cited

McArthur, Kathern L. 1980. Habituation of grizzly bears to people: A hypothesis. Proc. 5th Int'l. Conf. on Bear Res. and Mgmt. Madison, WI (In Press)

McCullough, Dale R. 1982. Behavior, bears and humans. pp. 27-33 in K. C. Sadler, ed. Wildlife Society Bulletin Vol. 10, No. 1.

U.S. Forest Service, 1982. Analysis of the Management Situation, Yellowstone Ecosystem Grizzly Bear Population. Unpublished report, U.S. Forest Service, Region 4, Ogden, Utah. 12 pp.

H1621 (RMR-PN)

MAR 17 1982

Memorandum

To: Area Manager, Fish and Wildlife Service, Billings, Montana

From: Acting Regional Director, Rocky Mountain Region

Subject: Section 7 consultation, Grizzly Bear Management, Yellowstone National Park

In accordance with Acting Director Wallenstrom's memorandum of February 24, we seek consultation under Section 7 of the Endangered Species Act on the preferred alternatives for the management of grizzly bears in Yellowstone National Park.

There have been refinements to the program over the years in a continuing effort to reduce conflicts between humans and bears, such as phasing out overnight accommodations at Fishing Bridge and restricting fishing to catch-and-release in certain waters. Basically, however, the program has not changed since the early 1970's. Previous reviews of this program have implied that the preferred action will not jeopardize the continued existence of the grizzly in Yellowstone. (See enclosed memoranda from Acting Area Manager, FWS, Billings, Montana, dated November 22, 1974, and Deputy Director, FWS, Washington, D.C., dated December 17, 1975.)

The increased use of non-Service lands by the Yellowstone grizzly bear population has necessitated interagency cooperation in the protection of the species. You will note that the Yellowstone Bear Management Policy is an integral part of Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area. As we are not contemplating a new action concerning the management of grizzly bears in Yellowstone National Park, we were under the impression that Acting Regional Director Gritman's Biological Opinion on the Guidelines, dated November 5, 1979, fulfilled the requirements for Section 7 consultation.

/sgd/ James B. Thompson

APPENDIX E

COMMENTS RECEIVED ON THE REVISED DRAFT EIS, AND RESPONSES TO THOSE COMMENTS

ADDRESS ONLY THE DIRECTOR,
FISH AND WILDLIFE SERVICE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

In Reply Refer To:
FWS/OES

OEC

FEB 24 1982

Memorandum

To: Director, National Park Service

MAR - 1982

Through: Assistant Secretary for Fish and Wildlife and Parks

From: Acting Director (SGD) Rolf L. Wellenstrom

Subject: Yellowstone Grizzly Bear Management Program Draft EIS (EC 81-49)

The Draft EIS has been reviewed by the Washington, Regional, and Area Endangered Species staffs of the U.S. Fish and Wildlife Service as well as the Service's Grizzly Bear Recovery Coordinator. Following are combined comments to the subject DEIS.

1. Page 4, paragraph 4 - We suggest that backpackers be prevented, not merely discouraged, from entering areas having high densities of grizzly bears. Seasonal concentration areas for grizzly bears can be identified and, in some cases, predicted. The elimination of human entry and disturbance at such sites will constitute positive management to: 1) prevent human/bear conflict; and 2) provide areas where grizzly bears can pursue natural behavior patterns including feeding, resting, and social activities free of human disturbance.

1 The text has been revised. See page 4.

2. Page 6, paragraph 11 - We suggest that all carcasses be processed as scientific specimens. The specimen should be maintained by the Park for use or appropriate distribution; or b) retained in the scientific collection at the Wildlife Laboratory, Montana Department of Fish, Wildlife and Parks.

Returning a valuable specimen of a threatened species such as the grizzly bear to the ecosystem without collecting the scientific information is not acceptable.

2 The text has been revised. See page 10.

3. Page 7, paragraph 1 - Regulations under 50 CFR 17.40 b(i)F (Special rules - mammals) state that "...regulations of the National Park Service shall govern all taking of grizzly bears in National Parks." Regulations governing taking on National Parks are found in 36 CFR 2.32 which governs hunting and 36 CFR 10 which governs disposal of live bears. To our knowledge no regulations dealing with dispatching of grizzly bears have been promulgated by the National Park Service. If such regulations are promulgated they would be subject to Section 7 consultation. We therefore assume that provisions of 50 CFR 17.40 b(1)C will be utilized. In addition to compliance with this section, we suggest that the decision to destroy a grizzly bear for other than emergency situations involving human safety be made by the Superintendent after consultation with the USFWS Senior

3 The paragraph has been changed. See page 10.

Resident Agent in Billings and the USFWS Grizzly Bear Recovery Coordinator. This will assure that management induced mortalities are compatible with the Grizzly Bear Recovery Plan objectives for limiting man-caused mortality.

4. Page 7, paragraph 2 - We suggest that release of grizzly bears inside the Park as relocations from adjacent lands be approved by the Superintendent in consultation with a grizzly relocation coordinator for the Yellowstone Ecosystem who will coordinate interagency communication for relocations.

5. Page 8, paragraph 4 - We believe the need to provide realistic population estimates of grizzly bears within and adjacent to the Park is secondary to the need to realistically assess the trend of the grizzly population in the ecosystem. Development of absolute estimates of actual numbers may never be realized. Trend assessment is possible and necessary to determine the viability of the population. Estimates of the population size do not answer the question of whether the grizzly population is recovering and responding to management by population increases. Assessment of population trends will allow determination of positive or negative effects of management over time and allow management changes to respond to these trends.

6. Page 9, last paragraph - The statement is made that Section 7 consultation requirements for this EIS have been satisfied because a consultation on the Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area has been conducted (FWS biological opinion dated November 5, 1979). The November 5, 1979, consultation was generic in nature and did not address specific actions or management plans whose implementation would be guided by the Guidelines. Specific actions and programs that are developed per the Guidelines must still be reviewed by the agency to determine if the action or program "may affect" listed species (50 CFR 402.04(a)). If the action or program is determined to have an affect on the grizzly, formal consultation with the FWS is required even though it has been designed according to the Guidelines. As stated in the November 5, 1979, biological opinion, "consultation on Forest Management Plans, Parks Master Plans, Park Resource Management Plans, or projects developed through the use of these Guidelines will be more appropriate than consultation on the Guidelines." Thus, the 1979 consultation on the Guidelines does not exempt Park Service actions or programs from further Section 7 responsibilities.

7. Page 10, paragraph 3 - The average number of grizzly bears killed outside the Park (cited as 4.25) "during the past 4 years" is the number of known kills. Certainly unknown kills occur that are never reported or verified. This should be noted. Also, the specific years used in the calculation of the average number of bears killed should be stated.

8. Page 10, paragraph 5 - This paragraph should indicate that the FWS proposal to designate Critical Habitat for the grizzly bear (Federal Register, Vol. 41, No. 215, Nov. 5, 1976), was withdrawn by the FWS in March 1979 (Federal Register, Vol. 44, No. 45). The proposal was voluntarily withdrawn to comply with the provisions of the Endangered Species Act Amendments of 1978.

4 The paragraph has been amended. See page 10.

5 We concur. The text has been amended. See pages 11, 13, and 28.

6 Consultation was requested. See Appendix D.

7 The paragraph is amended. See page 14.

8 The section has been amended. See page 14.

9 9. Page 12, paragraph 1 - There is currently no research biologist from either the USFWS or the USFS on the interagency grizzly bear study team.

10 10. Page 18, paragraph 10 - The complete removal of grizzly bears from the Yellowstone ecosystem by NPS action would also be a violation of the Yellowstone Establishment Act of 1872 (17 Stat. 32).

11 11. Page 21, first full paragraph - The fact that food is not a limiting factor for the grizzly bear population has been assumed but has not been scientifically demonstrated in the Yellowstone ecosystem. Statement #2 in the Alternative E Impacts section states that grizzly bear populations might increase if artificial foods are supplied. This infers that food is a limiting factor and therefore conflicts with the statement in the first full paragraph on page 21.

12 12. Page 24, first full paragraph - We are unaware of the documentation of a wolf population within Yellowstone Park.

13 13. Page 27, Item D - We suggest a correction in the distribution of the grizzly quoted from the NAS (1974) report as follows "...the nearest population to the north, in the Lincoln and Rogers Pass areas of the Helena National Forest and the Rattlesnake Mountains of the Lolo National Forest."

14 14. Page 31, first full paragraph - We suggest that the most recent Interagency Grizzly Bear Study Team reports be cited whenever relevant. Knight (1974) is an old reference and 1981 data are available.

15 15. Page 31, paragraphs 2 and 3 - These paragraphs are referencing old data. The current situation should be taken into account by citing the most recent data. Sightings of grizzly bears beyond previously reported habitat does not necessarily indicate an increasing population. Such sightings could also indicate increased reporting of observations, increased surveys and/or survey efficiency, or dispersal due to a change in climatic conditions such as summer frosts or drought.

16 16. Page 41, paragraphs 3 and 4 - Dated information on the grizzly use of campgrounds is presented. Current data should be presented. The statement "in the past four seasons..." is presented again, but the reader has no idea exactly what seasons are referenced.

17 17. Page 43, paragraph 4 - Is the estimate of 500-600 black bears within Yellowstone Park based on scientific data or is it conjecture? The basis for this estimate should be substantiated.

18 18. Page 44, Table 6 - Data for 1979, 1980, and 1981 should be presented.

19 19. Page 46, last paragraph to page 47, paragraph 1 - This paragraph contains strong statements concerning a possible increase in the grizzly bear population since 1973. The statement "available population data indicate that the population decline during and immediately following the dump closures was temporary and that replacement of losses has occurred" is not supported by the display and analysis of the "available data" used in this EIS. Since the grizzly population estimates within the Yellowstone

9 The paragraph is amended. See page 15.

10 We agree. Elimination of grizzly bears from the Yellowstone ecosystem is no longer considered a viable alternative. See page 19.

11 The text has been amended. See pages 12-13 and 45-46.

12 The reference to "wolf" has been amended. See page 25.

13 The text has been corrected. See page 27.

14 The most recent data has been incorporated in the final EIS.

15 The text has been revised to use current data. See page 28.

16 Current data is used in the final EIS. See page 39.

17 The text has been amended. See page 42.

18 Both Tables 6 and 7 have been updated. See pages 43 and 44.

19 The text has been revised. See pages 45 and 46.

ecosystem are a subject of considerable controversy (as stated on page 29), it is extremely important to document any statements concerning the population dynamics of the present population. The statements in this paragraph should be fully documented with data or eliminated if unsubstantiated.

20. Page 47, third full paragraph - Nuisance bears that become serious safety hazards should not be transferred to other jurisdictions for use in restocking programs. As per the Yellowstone Guidelines, such bears are not suitable for relocation.

21. Page 48, item b., paragraphs 1 and 2 - The most recent reports of the Interagency Study Team (Knight et al. 1981 among others) should be used and cited in any discussion of population dynamics.

22. Page 52, paragraph 7 - We agree (as in our comment concerning page 6, paragraph 11) that all dead grizzly bears should be carefully preserved as specimens.

Thank you for the opportunity to comment on the Draft EIS.

20 The offending phrase has been deleted and the paragraph amended. See page 47.

21 The most recent data from the interagency study team has been used. See page 48.

22 The comment is acknowledged. See page 10.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
1860 LINCOLN STREET
DENVER, COLORADO 80295

JAN 12 1987
Ref: 8W-EE

Ms. Lorraine Mintzmyer, Regional Director
Rocky Mountain Region
National Park Service
P.O. Box 25287
Denver, Colorado 80225

Dear Ms. Mintzmyer:

We have reviewed the Revised Draft Environmental Impact Statement (EIS) for Yellowstone National Park's Grizzly Bear Management Program. Although the subject of this EIS is largely beyond the areas of this agency's expertise and statutory responsibility, our comments are offered under our broader obligations pursuant to Section 309 of the Clean Air Act and our recognition of the profound significance of Yellowstone National Park and the wildlife resources of the Yellowstone ecosystem. In matters like this where wildlife management issues do not overlap the responsibilities that Congress has given us, EPA defers to the judgment of wildlife experts in the land managing and wildlife management agencies.

The bear management program outlined in the Revised Draft EIS seems to reflect a sensible approach to solving the problems that existed when portions of the Park's bear population apparently grew accustomed to garbage and handouts from Park visitors for some of their food. EPA supports this approach to maintaining the natural character of the Park environment and we recognize the incidental benefits of better solid waste management by the Park and surrounding communities as well as the enhancement of public safety through the reduced opportunities for bear/human conflict under the plan.

EPA also recognizes the efforts of the National Park Service to improve the scientific basis for its bear management decisions. Although we are in no position to pass judgment on the quality of the data presented in the Revised Draft EIS, we do hope that your agency will continue to support the work of the Interagency Grizzly Bear Study Team and seek resolution of the longstanding controversy among wildlife biologists concerning the present status of the Yellowstone Grizzly population and its prospects for the future. 23

We appreciate the opportunity to review the Revised Draft EIS. One copy of the final document will be sufficient for us to complete our NEPA review responsibilities for the Grizzly Bear Management Program.

Sincerely yours,

Steven J. Durham
Regional Administrator

23 The National Park Service will continue to support cooperative grizzly bear research.

IN REPLY REFER TO:
6840 (32)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
State Office
P. O. Box 1828
Cheyenne, Wyoming 82001

DEC 28 1981

Memorandum

To: Regional Director, Rocky Mountain Region, National Park Service, Rocky Mountain Regional Office, P.O. Box 25287, Denver, Colorado 80225

From: State Director, Wyoming

Subject: Comments on Revised Draft Environmental Impact Statement

We have reviewed the revised draft environmental impact statement concerning the grizzly bear management program in Yellowstone National Park. Several general, as well as specific, comments are provided below.

General Comments

24 1. This revised draft EIS appears to be more of a National Park Service policy advocacy paper than an objective presentation of all relevant information.

25 2. The review and discussion of basic bear biology and ecology was very superficial.

26 3. Those articles on bear biology that were incorporated in the analysis were very selectively reviewed. Only those facts and viewpoints which support the continuancy of the existing management policy were given credence. Even the National Academy of Sciences' report, which evaluates the entire grizzly bear management controversy, was selectively quoted to highlight only favorable comments.

27 4. The revised draft EIS does not include an analysis of all reasonable alternatives.

Specific Comments

28 Page 2, paragraph 5. The objective of the program is to "Preserve and maintain natural populations of bears as part of the park's native fauna and provide for the safety of park visitors." The duality of this objective and the failure to assign relative merit to these two, often opposing, objectives contributes to the inadequacy of this document and the policy it supports.

24 The final EIS is certainly made on a specific proposal by NPS, i.e., modifying the present management program. The text has been edited to present relevant information more objectively.

25 We believe we used and referenced data applicable and appropriate to the management of grizzly bears in Yellowstone, and have not attempted a comprehensive presentation of bear biology and ecology.

26 See comments for responses 24 and 25.

27 The comment does not suggest other alternatives.

28 The proposed action in the final EIS emphasizes preservation of grizzlies. However, the program is based on the National Park Service Establishment Act (August 25, 1916) which states that the purpose of the national park system is "to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same . . ." (39 Stat. 535). The act does not assign relative merit between conservation of resources and providing for their enjoyment.

In the early 1960's the Secretary of the Interior appointed a committee to clarify the role of the NPS with regard to wildlife management. The Leopold Report states that the NPS is to ". . . provide for the purposeful management of plant and animal communities as an essential step in preserving wildlife resources . . . unimpaired for the enjoyment of future generations."

29 In 1979 and 1980 the NPS transplanted 100 and 50 grizzly bears, respectively, from the park. This represents 57 to 13 percent of the entire grizzly bear population in the Yellowstone ecosystem, depending upon which population estimate is used. With no quantitative information on the "success" of these transplants, it is fairly safe to conclude that the continued transportation of large numbers of grizzlies from the park will not leave the grizzly population "unimpaired for the enjoyment of future generations."

29 The figures 100 and 50 refer to percentages of successful transplants (see Table 5), not numbers of bears.

Since 1967 the probability of a park visitor being injured by a grizzly bear averaged 1 in 1,230,000. The probability of a park visitor being killed by a grizzly is less than 1 in 30,000,000. Even before the era of stringent grizzly control measures (1931-1969) the probability of injury was approximately 1 in 126,000 (assuming a grizzly/black bear injury ratio of 1:5.5). These are certainly acceptable figures, particularly if put in perspective with the number of injuries caused by other factors: car accidents, elk and bison attacks, boating accidents, etc.

30 Yellowstone is perhaps one of our most spectacular natural assets. Much of the park qualifies as a "wilderness" in the strictest sense of the word. People are attracted to the park because of these "wild, natural, and primitive" qualities. The maintenance of these qualities should be the primary objective of the management agency. Public visitation, as a secondary objective, should be allowed only if it does not degrade the park's "natural" qualities. Only in this way can the NPS preserve Yellowstone's natural assets for the "enjoyment of future generations."

30 See response 28.

Page 6, paragraph 3. "No bear will be captured for transplanting or destroyed in a backcountry area unless it has become unnaturally aggressive, or other alternative methods for providing for human safety cannot be employed." Two points need to be stressed concerning this statement.

31 1. It is obvious from this statement that human safety has become the primary objective and the maintenance of a natural bear population is the secondary objective. This is not consistent with the NPS's overall charge as discussed above.

31 See response 28.

32 2. On the same page it states that "No bears will be destroyed for exhibiting its natural behavior—such as the defense of natural food sources or its young." These two statements are in obvious contradiction. What is "unnatural aggression" in a "naturally aggressive" animal? Who in the NPS is qualified to make this judgment?

32 A level of aggressiveness has been better defined. See page 9.

33 Page 12. What were the methods used by the Interagency Grizzly Bear Study Team in collecting information concerning the status and trend of the grizzly population? We cannot determine the validity of the data unless the data collection methods are known.

34 Without accurate, supportable grizzly bear population estimates it is impossible to evaluate the effects of management actions on the population. What methods were used by Cole and the IGBST? How do these methods compare with those used by the Craigheads?

35 Page 22. The center of the grizzly bear management controversy rests upon the validity of the different estimates of grizzly bear population size and trend. Cole, of the NPS, maintains that there is a large stable grizzly population in the park. The Craigheads' data suggests that the grizzly population is much smaller and declining.

The alternatives discussed in this EA include:

1. Continue present policy (using Cole's data)
2. No action - no control
3. Eliminate bears from the park
4. Further control visitor use
5. Provide "artificial" bear feeding sites within the park

36 A management strategy based upon the assumption that the grizzly population is relatively small and declining was not considered or discussed. Why was this possibility not considered? We cannot consider this EA minimally acceptable until this alternative is explored.

Page 29-31 Population Size. Three evaluations of the grizzly bear population are available.

	Population Size	Status
Craighead/Craighead (1971)	174	Declining
Cole (1974)	250	Stable
Knight (1974)	258-387	Stable/increasing

The population estimates of Cole and Knight were based on bear sightings where individuals were differentiated based upon size and color. The probability of error using this technique is probably quite high. An individual bear without distinctive marking may be mistaken for two or three individuals as it moves through the park. The natural result of this census system would be an overestimate of population size.

Population estimates by the Craigheads were based on the identification of bears that were individually color-marked. During the length of their study, approximately 256 bears were individually tagged and 24 individuals were radio-tagged (see enclosure). Since the probability of misidentifying individually marked bears is low, the population estimates based upon this data must be considered quite accurate.

33 Each annual report by the team identifies methods used.

34 The specific reports are cited and may be examined by the commenter.

35 The EIS has been updated to use the most recent data. In addition, see pages 45 and 46 for comparisons of Cole and Craighead. Also, note that alternatives have been modified and consolidated in the final EIS.

36 See response 35. The proposed action in the final EIS considers the possibility that the population may be declining (see references to Knight, 1981, pages 28 and 45).

Additional data collected by the Craigheads on radio-tagged bears indicates that grizzlies are extremely mobile, moving in and out of the park on a seasonal basis in response to the availability of food in different parts of the Yellowstone ecosystem. This type of foraging behavior has been observed in many opportunistic species exploiting patchy food resources.

37 Knight, however, upon learning of bear reports in "previously unreported habitat," has concluded that the population must be expanding. This conclusion, unsubstantiated by quantitative data, is inconsistent with the available information on grizzly ecology.

38 Page 48, paragraph 3. Adult male grizzly bears are a significant source of mortality in grizzly cubs, particularly in communal feeding situations where close contact is unavoidable. Since a larger number of males were removed/killed by the NPS during the period of intensive control actions (1970-1972), this would tend to decrease, not increase cub mortality.

39 Page 49. The data presented on female/cub ratios is based upon sighting records, where individuals were again identified based upon size and color differences. Due to the large amount of error inherent in this method, any projections or population trends based upon this information must be discarded. The reestablishment of a bear marking program appears to be the best method of obtaining accurate and supportable population status and trend information.

40 Page 50, paragraph 5. "Some visitors will appreciate the removal of danger (bears) and other visitors will not. Unfortunately, the proportions of both are unknown within the visitor-public as a whole." Why not find out?

41 Page 52, paragraph 5. Do transplanted bears return to their former territories or do they establish new activity areas? Do they have a high mortality rate? How many are killed because of livestock depredations? If there is any quantitative data on these questions, it should be presented. If no data is available, it should be collected in a scientifically sound manner.

Summary

There are probably several "types" of grizzly bears which frequent the park.

1. Those that have been habituated to human contact and associate humans with food.

2. Those that occasionally or infrequently wander into camp areas in search of food.

3. Those that probably never enter or use developed areas of the park.

37 See responses 35 and 36.

38 This paragraph has been updated using the Interagency Study Team's latest report.

39 The tables have been updated. A radio marking program has been used since 1975. Also, see research objective, page 11.

40 The National Park Service has attempted to fund sociological studies for the past five years and will continue to seek that funding.

41 See Table 5, page 41, on success of transplants. We know that some bears do return to former territories. The table shows that human-induced mortality is minimal for transplants within the park. Further information is needed regarding natural mortality.

Bears in category 1 should be controlled/eliminated, since they pose an unreasonable threat to human safety and can no longer be considered a part of the "natural" fauna. Bears in category 3 should obviously remain unharrassed. Controversy arises over the treatment of category 2 bears.

42 The NPS, in essence, has taken the stance that any bear that enters a developed area more than once should be removed or eliminated since it is displaying "unnatural behavior and cannot be considered wild." We view the behavior of bears in this category as representative of any omnivore that exploits a "patchy" food source. The "control" of these opportunistic feeders may ultimately promote the continued decline of one of the few remaining grizzly populations in the Continental U.S.

43 In conclusion, we urge you to provide a more unbiased discussion of grizzly bear biology and management and a complete reevaluation of the relative merits of increased tourism versus the long term maintenance of a healthy Yellowstone ecosystem. We have plenty of "people" parks where tourists can enjoy luxurious surroundings, safely view tame animals, and have easy access to scenic vistas. We have only one Yellowstone National Park where people still have the opportunity to pursue naturalistic challenges and experience nature at its finest. The preservation of these opportunities should be our primary goal.

Enclosure

Jack Belmain
ACTING

42 A bear that enters a given developed area more than once in a brief period of time is translocated as promptly as possible to prevent habituation to human food sources. "Control" does not necessarily mean that that bear is eliminated. The Yellowstone program is compatible with the Guidelines and with the approved Recovery Plan designed to bring the bear to a status that is not threatened.

43 We would agree, but see response 28, and pages 46-47.

Grizzly Bear - Man Relationships in Yellowstone National Park

John J. Craighead and Frank C. Craighead, Jr.

The grizzly bear, *Ursus arctos horribilis*, is an intelligent, extremely efficient omnivore and a relatively inefficient carnivore. This large bear feeds on grasses, sedges, tubers, berries, nuts, carrion, meat caches, rodents, big game, livestock, garbage, and even modern packaged foods. The propensity to seek and utilize a wide range of edibles has brought the grizzly into frequent contact with man. This ecological relationship of the omnivorous grizzly associating with omnivorous man and the predatory bear competing with the predatory human has led and will continue to lead to confrontations, property damage, and occasional conflict and injury. The grizzly has a long history of seeking and taking the food it wants with little opposition. The erratic, aggressive, and frequently unpredictable behavior of both grizzly and man increases the probability of conflict. The opportunity for confrontation and for injury to humans is small, but it is greater in national parks than elsewhere.

To understand grizzly bear-man relationships in Yellowstone National Park, we must first recognize that the ecology of bear and man has always overlapped. Within recent geological time, wherever the species existed, the grizzly bear was at or near the top of the North American food pyramid.

The North American Indian and the grizzly bear coexisted in a spacious environment. Two questions we wish to explore are can the grizzly bear and modern man co-exist in the congested environments of our large national parks? Specifically, can man and grizzly live together in Yellowstone? Secondly, if they can co-exist, how should man achieve this? Both questions require more than theoretical or philosophical answers, ethological extrapolation, administrative decrees, or generalized guidelines.

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We, our colleagues, and our graduate students sought to answer these questions 12 years ago when we began a long-term study of the grizzly bear within the 19,943 km^2 (7700 miles^2) National Park and adjacent national forests (Craighead et al., 1960). Since 1959, we have captured, examined, and released over 550 grizzlies, immobilized and individually color-marked 256 and logged over 40,000 man-hours observing and recording their activities and behavior. In addition, 24 individual grizzlies have been fitted with radios and radio-monitored for approximately 30,000 hours in order to obtain data on movements, home ranges, food habits, social and denning behavior, and an understanding of bear-man relationships (Craighead and Craighead, 1965, 1969, 1970).

Some Biological Facts

Using data from 324 censuses totaling 11,340 hours and from an intensive trapping, re-trapping, and marking program, we have calculated a minimum of 175 grizzly bears in the Yellowstone area. One-third of the adult females (about 15) breed each year and produce an average of 33 cubs or a 19% annual increment. The females first breed successfully at 4 ½ years though many may not produce cubs until they are 8 or 9 years old (Craighead et al., 1969). The annual increment slightly exceeds the mortality rate; thus, the population grew at an average annual rate of approximately six grizzlies per year from 1959 through 1966 (Craighead and Craighead, 1967). An increase in the death rate, especially of adult females, could jeopardize the population.

In the summer months, grizzlies gradually, but steadily, congregate at Trout Creek (Fig. 1) and at other major open-pit dumps in and outside of Yellowstone. Grizzlies are attracted to these dumps from all portions of the Park and from the adjoining national forests. Peak densities are reached in August. Our observations indicate that there are few grizzlies in the Yellowstone backcountry during this time. Mullen and Booth (1969) also found fewer grizzlies on the Shoshone National Forest adjacent to Yellowstone during August than prior to and after this month. Our census and movement data (Craighead and Craighead, 1967) show that Yellowstone National Park serves as a summer refuge for many grizzly bears whose home ranges extend beyond the Park boundaries. We have computed that a 12,950 km^2 (5000 miles^2) area including Yellowstone National Park and an adjacent 16.1-km (10-mile) corridor of national forest land supports an average of about one grizzly bear to every 75.1 km^2 (29 miles^2). Some grizzlies spend their lives entirely within the Park; others do not. Those that move outside the Park boundaries are hunted. Forty-eight per cent of the grizzlies shot outside the Park from 1959 to 1968 were adult animals and 52% were subadults ranging from yearlings to 4-year olds, showing that outward movement from within the Park is not confined to young animals. These data suggest that movements of grizzlies out of the Park result from the species' natural mobility and should not be interpreted as evidence that grizzlies have exceeded the carrying capacity of their environment in Yellowstone National Park.

Studies have been made of the movements and home ranges of grizzlies inhabiting Yellowstone and adjacent portions of four national forests. Data from color-marked and radio-tagged bears show that most, perhaps all, of the grizzlies in this population feed at one or more of the earth-filled garbage dumps (Fig. 2) at sometime during the course of their lives; some visit the dumps frequently, others infrequently. Thus, it is doubtful if the term "wilderness grizzly" is useful if we mean an animal having no contact with "artificial" food sources. For example, 114

No response needed.

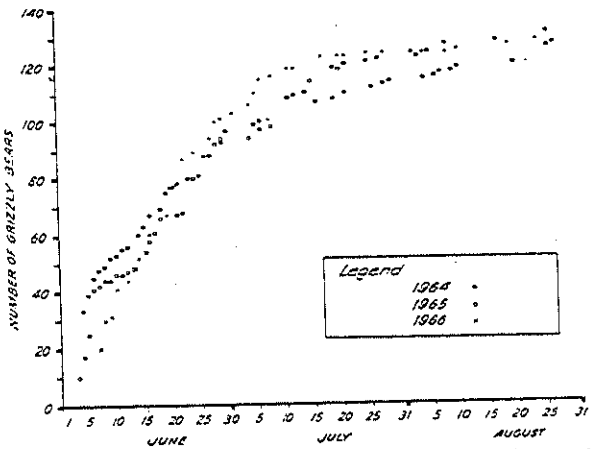

Fig. 1. Seasonal coalescence of grizzly bears at Trout Creek Dump. Each data point represents a 3 ½ hour census.

marked grizzlies were identified at the Trout Creek Dump during the summers of 1966 through 1968. Table 1 lists the number of these marked animals identified at the dump and also in the backcountry. During a 3-year period, 37% of all the marked grizzlies that visited the Trout Creek Dump were also observed in the backcountry. Because of the pattern of human use in Yellowstone National Park, areas a kilometer or more from roads and developed areas conform to the definition of wilderness as it is stated in the National Wilderness Preservation Act. Approximately 95% of the 7806 km^2 (3400 miles^2) in Yellowstone National Park can be considered backcountry. Most backcountry observations were made in spring and fall when the grizzlies were dispersed. As Table 1 shows, all age classes disperse throughout the Yellowstone backcountry.

Additional observations in the backcountry and at other garbage dumps during other years also show that, in the spring and fall months, the grizzlies that feed in summer at these garbage disposal areas also frequent the Yellowstone wilderness.

All Yellowstone grizzlies, regardless of their feeding habits or degree of association with man, inhabit wilderness portions of the Park and adjoining national forests from October through April. Thus, management of grizzly bears in Yellowstone Park affects not only resident animals in the Park but also grizzlies inhabiting four national forests in three states.

Food disposal areas (Fig. 2) have attracted grizzlies for over 80 years. They have shaped and are integrally meshed with grizzly bear ecology in Yellowstone. Except for the nature of the food, they are ecological equivalents of the spawning salmon runs that attract and concentrate Alaskan brown bear (*Ursus arctos middendorffi*) during the summer months. Yellowstone garbage sites concentrate the grizzly bears during a 3-month period from June through August.

Key questions posed are: Have the garbage dumps basically altered the grizzly's relationship to man? Have they increased or decreased grizzly-man conflicts in Yellowstone? Should they be eliminated and, if so, how? To answer these questions we must understand bear-man relationships and the nature of bear-man conflicts.

Bear-Man Relationships

We can classify grizzly bears inhabiting the Yellowstone area into four types, based on their feeding behavior as related to humans. These are: (1) bears which forage at the garbage disposal areas during summer months; (2) those that either occasionally or habitually visit campgrounds or developed areas; (3) bears man-conditioned by food handouts at lodges and construction camps; and (4) grizzlies which reside throughout most of the year in the backcountry and rarely visit a garbage dump, campground, or other developed areas. Overlapping of types occurs, yet the four categories are quite distinct. The majority of bears fall into the first category. Those in the second and third categories, though few, are the most troublesome. Practically no Yellowstone grizzlies qualify for the fourth category.

Behavior of grizzlies frequenting garbage dumps. We have obtained no evidence that the Yellowstone area has two distinct populations of grizzlies – "wild living" animals inhabiting the wilderness country and "garbage-addicted" grizzlies inhabiting the dumps and developed areas of the Park. On the contrary, thousands of man-hours spent observing grizzlies at open-pit dumps and hundreds spent observing these same color-marked animals and monitoring radio-instrumented bears in wilderness country divulged not two distinct populations but two distinct behavioral patterns. Many of the grizzlies that feed at the isolated, open-pit, garbage dumps exhibit less fear and greater tolerance of man at these areas than at other areas. The same animals that ignore human scent at the dumps are quickly alerted by it in the backcountry. From hundreds of encounters that we made with grizzlies when they were 0.8 kilometer (½ mile) or more from the dumps, we observed that, in most instances, they were alert and wary and would generally flee when they heard us or got a scent. Tolerance of man while feeding on artificial food at the dumps is definitely linked with specific sites. It is not a general toleration of humans or of human scent although in rare instances the on-site conditioning may alter behavior in other locations. Animals that feed at garbage dumps, presumably where the human scent is strong, ignore it there but not elsewhere. We have little evidence that garbage feeding changes their human avoidance behavior. Troublesome grizzlies normally develop their behavioral patterns toward humans under quite different circumstances.

The Yellowstone garbage dumps provide grizzlies with an abudance of palatable food, congregate them for an unnaturally long period of time, and alter some of their behavioral patterns. Feeding at these dumps does not normally develop grizzlies into garbage

No response needed.

seeking animals, make them dependent on humans (Leopold, 1970), or create incorrigible animals. This does not imply that the garbage dumps are beneficial and should be kept open: it does mean that eating "unnatural" versus "natural" food does not, in itself, significantly alter the behavior of Yellowstone's grizzlies toward human beings.

Behavior of grizzlies frequenting campgrounds. Of 36 grizzly bears captured and initially marked in campgrounds, 64% re-entered a campground or developed area following their release; 28% re-entered two or more times. Among 221 grizzlies initially captured and marked at garbage disposal sites or in the backcountry, 36 (16%) were later captured in a campground or developed area. Only 9.5% re-entered two or more times (Table 2). Thus, many grizzlies initially captured and marked in campgrounds had already developed chronic campground feeding habits and they became problem animals more often than grizzlies captured and marked elsewhere. The data in Table 2 also suggest that capturing and marking grizzlies, which was essential to document the animals' behavior and movements, did not condition them to man or convert them into troublesome bears. Had this occurred, a much higher percentage of those captured and marked outside of campgrounds would have become "campground foragers." Evidence indicates that most of the troublesome grizzlies were developing or had already developed into problem animals before they were captured and marked in campgrounds.

The large number of animals marked (over 60% of the population at one time), as well as the unmarked grizzlies, exhibited a normal range of bear behavior. However, only bear-man relationships involving marked grizzlies could be individually and quantitatively documented. Therefore, few objective or legitimate comparisons can be made between avoidance or confrontation behavior of marked versus unmarked animals. Since we have no evidence that capturing and marking grizzlies altered their behavior toward humans, information obtained from marked animals is considered representative of both marked and unmarked ones.

From observations of marked bears and from records of radio-tagged ones, we learned that grizzlies become accustomed to campground foraging during spring and fall migratory movements when their travel routes intercept campgrounds. During this same period, grizzlies extend their home ranges searching for food. This pattern has been especially evident at the Lake and Canyon Village Campgrounds. Yearlings and 2-year-olds may wander into campgrounds following weaning, a time when they normally begin to disperse and establish home ranges of their own. For this wide-ranging, inquisitive animal, chance alone, no doubt, accounts for the discovery of, and addiction to, the food available in campgrounds. Those that learn to frequent campgrounds become conditioned to the near presence of humans. Those that enter infrequently remain shy and secretive. Habitual campground foragers normally develop behavioral patterns in response to the presence of man that are markedly different from those of grizzlies that feed at the isolated, open-pit dumps.

Any grizzly which frequents a campground is a potential hazard because humans may startle it at close range and be attacked. However, it is important to discriminate between habitual offenders and those that enter campgrounds for short periods of time, then move on and do not repeat the offense except infrequently over a period of years. It is difficult to define precisely the habitual offenders or incorrigible animals on a basis of frequency of visitation or frequency of recapture in campgrounds. However, until better criteria can be formulated, we have defined habitual offenders as those recaptured four or more times. Table 3 shows that among 72 grizzlies of both sexes, 69% were either never recaptured or were recaptured only once; 87% were not recaptured or were recaptured one to three times. Only 13% were recaptured four, five, or six times. These individuals constitute the habitual offenders.

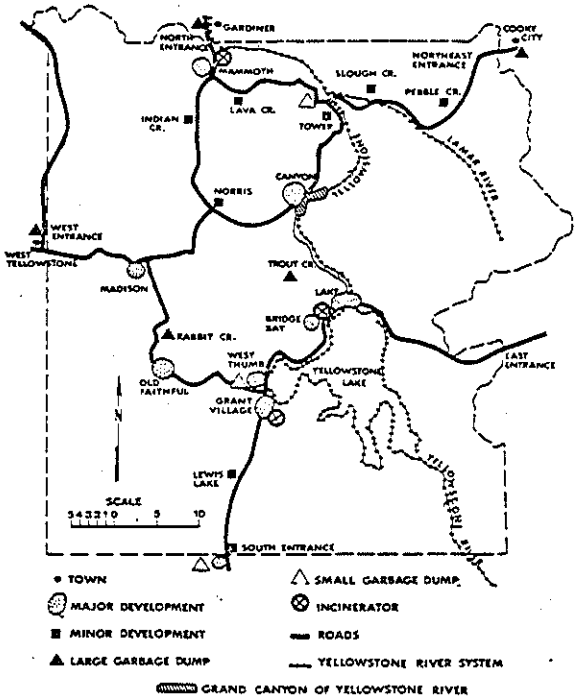

Fig. 2. Map of Yellowstone National Park showing developed areas, garbage dumps, and incinerators.

No response needed.

TABLE 1. Color-marked grizzlies observed at Trout Creek Dump and reobserved in wilderness areas[a] of Yellowstone National Park from 1966 to 1968

Cubs	1-Year Olds	2-Year Olds	3-Year Olds	4-Year Olds	Adults		Total
					Males	Females	
229	218	183	156	141	30	39	
230	219	202	177	144	207	40	
236	220	216	185	147	217	101	
240	221	227	211	165		112	
241	233		228	183		128	
256				188		132	
				208		141	
						163	
						172	
						173	
						187	
						228	
6	5	4	5	7	3	12	42

[a]Wilderness and backcountry are used synonymously in the text. They are undeveloped, roadless areas retaining their primeval character without permanent improvements or human habitation, in these areas, the earth and its community of life are untrammeled by man, and man himself is a visitor.

Table 4 shows that 28 of the 72 bears captured in campgrounds or developed areas between 1959 and 1969 were killed or sent to zoos; 61% of these had recapture records of zero or one, and 86% had recapture records ranging from zero through three. Thus, 86% of the campground grizzlies which were eliminated had not become habitual offenders. Obviously, the percentage of habitual offenders would have been greater had bears, which were initially captured or had three or less recaptures, not been dispatched. On the other hand, 51.4% of the 72 grizzlies captured in campgrounds and released had recapture records of less than four and these were not recaptured again. This suggests that grizzlies entering campgrounds should be transplanted long distances into the adjacent National Forest wilderness country following a first capture rather than dispatched. Cooperative agreements could accomplish this. Such a procedure would tend to break the reward pattern that may develop when grizzlies return frequently to campgrounds and find food. Eight grizzlies handled in this way were eventually taken as trophies by hunters outside the Park.

In general, frequency of recapture of individual grizzlies is directly related to the time a bear occupied a campground because it was routine procedure to keep traps set whenever grizzlies were observed. The incorrigible bears can be recognized because they will seek food in defiance of visitors and ranger patrols, make repeated bluffing charges at humans, and break and enter tents and trailers. Generally, such bears have a long history of campground tenancy. There is no question about the necessity of eliminating such animals. The problem is what to do with infrequent offenders. We believe great discrimination should be practiced in eliminating grizzlies after the first capture or with recapture records of one through three.

Behavior of grizzlies conditioned by food handouts. By radio-tracking grizzlies that had been regularly fed in the presence of humans or that had developed foraging habits bringing them into frequent and close association with man, we learned that such animals developed behavioral patterns that made them extremely dangerous. They learn to associate food-getting with humans and soon lose their fear of man and human scent. They become thoroughly conditioned to man. This conditioning is not associated with a particular feeding area, as is the case with grizzlies that feed at remote garbage dumps, but is a general conditioning to man wherever he is encountered. Such animals may co-exist with people for extended periods of time but, sooner or later, these man-conditioned animals are startled by humans at close range, defy interference at a food source, or completely disregard humans in their attempts to get food. This may occur in a campground, on a trail, or in the backcountry. The result may be a bear-man encounter ending in human injury or death.

For a grizzly to lose its shyness or fear of man requires cooperation and encouragement, and the initiative is usually with man. One male grizzly, No. 202, was radio-tracked for 2 consecutive years during the summer and autumn. Yearling No. 202 was instrumented and radio-monitored for 56 days in 1965. During that time, he established a 69.9 km^2 (97 $miles^2$) home range that encompassed Canyon Village, but he did not visit the campgrounds and caused no trouble. However, the following spring when he emerged from winter sleep, he swam the river and traveled the north rim of the canyon which led him directly into the Canyon Village Campground with its food supply.

As a 2-year-old, he was radio-monitored for 118 days of 1966. Though frequenting the campground, he gave no serious trouble until fall when he began visiting two construction camps in the area. He received food handouts and soon became bold enough to attempt to enter trailers and to feed

TABLE 2. Number and per cent of 257 color-marked grizzlies captured or recaptured in a campground or adjacent developed area, 1959-69

	Grizzlies Initially Marked Inside Campgrounds	Grizzlies Initially Marked Outside Campgrounds	Total
Number marked	36	221	257
Per cent of marked population	14.0	86.0	100
Entering campground or developed area once *as a marked bear*			
Number	23	36	59
Per cent	63.9	16.3	23
Entering campground or developed area two or more times *as a marked bear*			
Number	10	21	31
Per cent	28.0	9.5	12

No response needed.

fearlessly in the presence of humans. During 1966, this animal established a home range 323.7 km² (125 miles²), with Canyon Village Campground as his center of activity.

Emerging from winter sleep as a 3 ½-year-old animal, he returned to his old haunts in the campground. No. 202 was not an aggressive bear, had inflicted no injury, and had caused little or no property damage, but he had been conditioned by food handouts, had lost his normal respect for man, and, thus, became a potential menace to the safety of visitors. He was shot as a precautionary measure at the age of 3 ½.

Fortunately, grizzlies conditioned by food handouts at concessionaires or work camps have been rare in Yellowstone National Park. They have been more numerous in Glacier National Park. On the evening of 13 August 1967, at two widely separated locations in Glacier, grizzly attacks resulted in the deaths of two 19-year-old concessionaire employees and serious injury to an 18-year-old boy. Both attacks can be linked to food handouts and man-conditioned bears (Olsen, 1969; National Park Service, 1979; Leopold, 1970; and personal communications, Gerry Atwell, 1967; Frank Evans, 1967). Once man-conditioned by food handouts, the grizzly must be destroyed. The solution to such conditions is campground sanitation, frequent ranger patrols, and thorough enforcement of the National Park Service regulations pertaining to the feeding of bears.

Behavior of grizzlies in the backcountry. Grizzlies, living under wilderness conditions, utilize natural food but may be attracted to food made available by humans, and may become man-conditioned. For example, in 1961, a crew working on the control of blister rust experienced frequent confrontations and attacks from a 3-year-old, male grizzly in the Washburn Range, far from a developed area. At first the bear was shy and avoided the men. Over a period of several weeks, he gradually lost his shyness. He excavated buried lunch trash and then accepted lunch scraps thrown to him. Eventually, he approached boldly for food and made bluffing charges. On five occasions, he treed members of the crew and then rifled their packs and lunch pails. We later captured, color-marked, and numbered this animal. He became No. 80; his movements to and from campgrounds are shown in Figure 3. This thoroughly man-conditioned grizzly was shot in June 1963 by Park rangers after molesting visitors camped in wilderness country near Lewis Lake. This documented account illustrates the role of food handouts in developing incorrigible bears. Generally, conditioning to man evolves in developed areas, but it is not necessarily limited to them.

TABLE 3. Recapture record of grizzlies captured in campgrounds — 1959-69

	Number of Times Recaptured in a Campground							
	None[a]	One	Two	Three	Four	Five	Six	Total
Males	13	16	4	4	2	1	1	41 (57%)
Females	13	8	2	3	1	3	1	31 (43%)
Total	26	24	6	7	3	4	2	72 (100%)
Per Cent	36	33	8	10	4	6	3	
	69		18		13			
	87				13			(100%)

[a]None = captured in a campground and never recaptured.

Bear-Man Conflicts

The probability of being injured or killed by a grizzly bear in Yellowstone National Park is very small. From 1900 to 1970 there have been two fatalities from grizzlies (National Park Service, 1880-1970). Both occurred in the early 1900s. From 1931 to 1970, when more detailed records were kept, official National Park Service records show 63 injuries and no fatalities. During these 39 years, an average of a million people per year visited the Park. Thus, the injury rate from grizzlies has been one person per 600,000 visitors.

Although grizzly bear attacks on man are rare, they provide exciting news copy and generate apprehensive, public response. This, in turn, has initiated control action often with over-reaction-ary measures that have been harmful to the co-existence of the grizzly and man. Following the 1967 fatal incidents in Glacier National Park, four female grizzlies were shot and a cub was wounded. Only one of these animals was conclusively linked with the attacks. The National Park Service Report, "Grizzly Bear Attacks at Granite Park and Trout Lake in Glacier National Park, August 13, 1967," suggested garbage-feeding as a conditioning factor, but did not mention the frequent feeding of grizzlies on garbage and food handouts in the presence of human viewers. This conditioned the bears at Granite Park to lose their normal respect for humans and may have man-conditioned the particular animal responsible for the tragedy.

Lightning storms, age, and physical ailments of the bears, and unknown reasons, were listed as possible causes of the Trout Lake fatality. Cosmetics, hair sprays, and menstrual odors were cited as the probable causes for this particular attack. Subsequently, signs were erected at trail heads, warning — "Women — Do not travel in the backcountry during menstruation." This presumed cause for the attack — to our knowledge unsubstantiated — was widely publicized

TABLE 4. History of the 28 grizzlies eliminated following initial capture or recapture in campgrounds — 1959-69

Times Recaptured in Campgrounds	None[a]	One	Two	Three	Four	Five	Total
Number of males eliminated	4	7	2	0	1	1	15
Number of females eliminated	3	3	2	3	0	2	13
Total grizzlies eliminated in control measures	7	10	4	3	1	3	28
Per cent eliminated	25	36	14	11	3	11	
	61		25		14		
	86				14		100%

[a]None = captured once in a campground and eliminated.

No response needed.

and probably deterred many women from making wilderness hikes.

Personal injury records. Personal injuries caused by grizzly bears have been recorded in Yellowstone National Park for the past 40 years (1931-70). We have found it difficult to evaluate these records because the injuries have varied in severity from bruises and minor wounds, requiring no professional medical attention, to those that required hospitalization. Also, there has been doubt whether some injuries were inflicted by grizzlies or by black bears. We have accepted with reservations the data which show 62 known and probable injuries from grizzlies, or 1.55 per year.

From 1959 through September 1970, we worked closely with Park rangers to keep more accurate records of personal injuries inflicted by grizzlies (Table 5). Injuries during this period averaged two per year or approximately one injury for every 900,000 visitors. This is hardly a record that would support the removal of all grizzlies from Yellowstone (Moment, 1968) or a drastic control program within the Park. However, during 3 years of the Park Service's present program of bear management (1968-70), injuries averaged 3.33 per year. In comparison, injuries were only half as numerous from 1959 to 1967 – averaging 1.67 per year. We believe that the increase is due largely to the present management practices that have forced grizzly bears into campgrounds and developed areas of the Park (Fig. 5).

Control measures. Control of grizzlies within the Park is performed by the ranger staff. Troublesome animals are either killed or shipped to zoos. The term "dispatch" includes both of the control measures. From 1931 to 197[illegible] 140 grizzlies have been killed; this is 40-year average of 3.50. The exac number shipped to zoos during th period is unknown.

Seventy-four grizzlies have bee dispatched by the Yellowstone ad ministration during our 12-year perio of research. This averages 6.17 grizzli per year (Table 5). During 9 years this period (1959-67), prior to th enactment of the Park Service's presc program of bear management, contr averaged 4.1 per year. During 3 years revised management (1968-70), contr averaged 12.3 grizzlies per yea Twenty-two grizzlies were eliminate from the Yellowstone population control measures in 1970. Informatio on the number of deaths occurring fro other causes during 1970 is not y available. However, there was an averag of 11 such deaths per year from 19 through 1966. These represent onl those deaths where the causes of deat were known. If we assume that 1 grizzly bears will die in addition t those eliminated by control, then th expected loss from the populatio during 1970 will total 33. This ju equals the average annual increme (Craighead and Craighead, 1967), b statistics compiled during our stud indicate that as many grizzlies die ea year from unknown as from know causes. Consequently, the populatio loss for 1970 will greatly exceed th average annual increment. It is obvio that the Yellowstone grizzly populatio cannot long sustain such losses.

A comparison of the annual contr figures and personal injuries with Pa visitation from 1959 through 19 (Table 5, Fig. 4) shows no correlatio with the increase in visitor numbers. correlation should be expected. We a tribute the lack of one to the fact th the open-pit dumps served to conce trate and isolate the grizzly bear popul tion during the tourist season. Al public use of these areas has be restricted, thereby reducing the prob bility of grizzly-visitor interactions. W believe that the increased number bears killed or sent to zoos (Table during 1968-70 was directly related the abrupt phasing out of the Tro Creek Dump and the closure of t Rabbit Creek Dump, which forced gr zly bears into campgrounds. This d stroyed the effective zoning of grizz and man that prevailed from 19

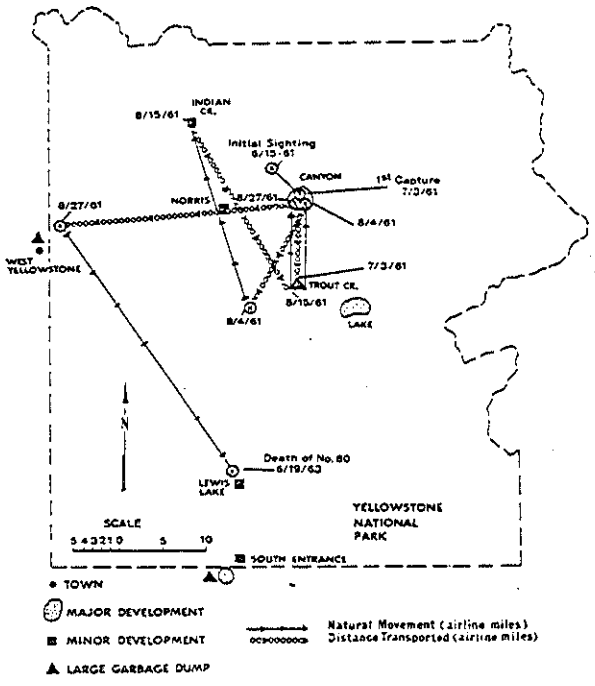

Fig. 3. Movements of Grizzly No. 80.

No response needed.

TABLE 5. Injuries from grizzly bears, and control measures in Yellowstone National Park, 1959-70

Year	Park Visitors[a]	Personal Injuries	Control Measures: Grizzlies Killed	Control Measures: Grizzlies Sent to Zoos	Control Measures: Total
1959	1,408,667	0	6	1	7
1960	1,443,288	0	4	0	4
1961	1,528,088	1	1	2	3
1962	1,925,227	2	4	0	4
1963	1,872,417	6	2	4	6
1964	1,929,316	1	2	1	3
1965	2,062,476	4	2	0	2
1966	1,130,313	1	3	0	3
1967	2,210,023	0	3	2	5
1968	2,229,657	1	5	0	5
1969	2,193,814	6	10	0	10
1970[b]	2,200,000	3	14	8	22
Total	22,133,286	25	56	18	74

[a]Data obtained from Yellowstone Park records, 1959-69.

[b]We estimated visitor numbers for 1970.

through 1967. As we have shown, the average number of grizzlies dispatched during the last 3 years is three times the average for the preceding 9 years. Using 200 grizzlies as a maximum population estimate (based on 324 census of 3 ½ hours each totaling 11,340 hours, Craighead and Craighead, 1967), we can calculate that the population reduction effected by control measures for 1970 alone (22 grizzlies through 15 September) will exceed 10% of the Yellowstone population.

Control methods must differentiate between the dangerous, but relatively few, man-conditioned animals in the population and those essentially wild animals that for generations have fed at the remote garbage dumps and, in the course of seasonal movements or rare periods of natural food scarcity, have entered developed areas. Grizzlies become man-conditioned by eating in the presence of humans.

Transplants. For many years, troublesome campground grizzlies in Yellowstone National Park have been transplanted to remote areas within the Park. To evaluate the effectiveness of transplant and release as a technique for disrupting the campground foraging habits of grizzlies, we marked captured animals and released them at suitable sites from 1959 through 1967. We then recorded their movements by recapturing them. Starting in 1968, this task has been performed by Park rangers. Table 6 shows that over an 11-year period, there were 145 releases of grizzlies within Yellowstone National Park at varying distances from the campgrounds or developed areas where they were captured. Our data show that 68% of these animals returned to the same or another campground following release. Although the percentage returning decreased with the distance transported, the capture-transport-release technique within the Park is clearly only a partial solution for dealing with troublesome grizzlies. Information from campground bears radio-tracked for extended periods of time further supported this conclusion. We believe more distant releases on federal lands adjacent to the Park would prove more successful.

Campground management. A concerted effort has been made to remove food from campgrounds or make it unavailable to bears. The installation of numerous, bear-proof garbage cans has helped the sanitation problem. However, campgrounds are still attractive to bears and will probably remain so as long as visitors are careless with their food or deliberately distribute table scraps to entice birds, bears, and other animals.

Behavior of Grizzlies in Response to Revised Management Practices

In 1941, officials of Yellowstone National Park abruptly closed the Canyon Village and Old Faithful feeding stations where large numbers of grizzlies and black bears were viewed by the public. The following year, rangers found it necessary to kill 28 grizzlies and 54 black bears when these animals dispersed to campgrounds and the hotels at Canyon Village, Lake, and Old Faithful in search of food. An emergency situation existed that year, even though only 191,830 visitors were recorded in the Park.

From 1968 through 1970, with visitor numbers exceeding 2 million per year, the Yellowstone administration proceeded to repeat this type of management by abruptly phasing out the Tower, West Thumb, Trout Creek, and Rabbit Creek open-pit garbage dumps.

In 1967, prior to this decision, we had made a report to the National Park Service, *Management of Bears in Yellowstone National Park*, (Craighead and Craighead, 1967). In that report, we recommended slow phasing out of the open-pit garbage dumps, cautioning that:

> Because phasing out of refuse dumps will disperse the grizzlies by destroying an attractive, if not essential, food source, the transition from pits to incinerators must proceed gradually, enabling the grizzlies to develop new feeding habits as well as altered social behavior and movement patterns. If the transition is slow and follows a recommended procedure, it is possible that no severe changes in population level, distribution, or behavior will result. If, on the contrary, the phasing out operation is abrupt, and a carefully planned procedure is not followed, the result most certainly will be increased grizzly incidents in campgrounds, accelerated dispersal of bears to areas outside the Park, and greater concentrations of grizzlies at

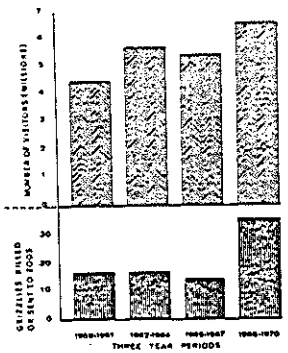

Fig. 4. Comparison of number of visitors and number of bears dispatched at Yellowstone National Park during 3-year periods, 1959-70.

No response needed.

TABLE 6. Record of the release of grizzlies after initial capture in a campground or developed area and subsequent recapture, 1959-69

	Distance Grizzlies Transported (airline km)				
	0 - 10	11 - 20	21 - 30	31 - 40	Totals
Number of releases after initial capture	75	46	20	4	145
Number of recaptures in any campground or developed area after release	53	32	12	1	98
Per cent of recaptures in any campground or developed area after release	70.7	69.6	60.0	25.0	67.6

the public dumps in Gardiner and West Yellowstone, where food will be available but where adequate protection will not. The net result could be tragic personal injury, costly damages and a drastic reduction in the number of grizzlies.

Phase-out of open-pit dumps. During the summers of 1959 through 1967, approximately 1000 cans of unsorted edibles and trash had been deposited daily at Trout Creek. The refuse was lightly covered with soil, usually on the day of deposit. The volume of food attracted and held grizzlies in the area during the summer months. During 1959-67, we documented the effect of this artificial feeding situation on the habits and behavior of grizzlies.

In 1968, the volume of garbage taken to Trout Creek was drastically reduced and we documented the effect of this on grizzly behavior. Edibles were partially separated from trash and dumped, but not buried. The sorted food consisted of approximately 50% nonedible trash. Most of the refuse formerly dumped at Trout Creek was handled by the newly installed incinerator at Bridge Bay which had an operating capacity of 272.7 kg (6000 lb.) per hour. Our records, made when the refuse was dumped, showed that a maximum of eight cans per day were deposited from 3 June through 14 June; between 15 June and 15 July, the number gradually increased to 40 per day. During the remainder of the summer, the number was not increased significantly except when the Bridge Bay incinerator broke down.

The early summer cut-off of food, followed by a drastic reduction in edibles during the summer of 1968, dispersed the grizzlies throughout the Park. Our documentation of marked animals showed that many found their way into campgrounds, traveling between Trout Creek and the Canyon Village and Lake Campgrounds. Others moved back and forth between Trout Creek and the dumps at Rabbit Creek and West Yellowstone. This type of movement did not occur from 1959 through 1967 prior to the phase-out. Our censuses of population units in the vicinity of each major dump showed that these units tended to be self-contained with very little exchange of animals (Craighead and Craighead, 1967).

Many unmarked grizzlies also entered campgrounds. Fifty-four per cent of the 37 grizzlies captured in campgrounds in 1968, 48% of 33 captured in 1969, and 41% of 49 captured in 1970 were unmarked. The movement of practically all the Trout Creek grizzlies, marked and unmarked, was greatly accelerated. A measure of this movement and disruption of long-established habits is reflected in the frequency of capture and the numbers of grizzlies captured in campgrounds each year during the period 1959-67 as compared to similar data for 1968 to 1970. The number of individual grizzlies captured in 1968 is approximately four times the average for the previous 9 years and double the previous high of 1961. Frequency of capture was the highest recorded in 10 years (Fig. 5).

In 1969 we continued on-site measurements of the volume of garbage dumped at Trout Creek. Between 130 and 170 cans were deposited daily from 15 June through August. Most of this was in plastic bags. Only about half the contents were edible. As in 1968, the garbage and trash were not buried, so the grizzlies that arrived at the dumps first were able to consume most of the food by evening; this left little to hold animals which arrived later. From 1959 through 1967, the general procedure was to dump trash with garbage and partially cover it with soil each day. This provided a long feeding period and allowed numerous animals to share the food. This procedure had, in the past, kept the grizzlies concentrated.

The dispersal of grizzlies that began in 1968 continued in 1969. The slight increase in the amount of garbage, designed to rectify the situation, was ineffective. The frequency of capture as well as the number of grizzlies captured in campgrounds and developed areas remained high (Fig. 5). In 1970, following the closure of the Rabbit Creek Dump, frequency of capture of grizzlies in campgrounds climbed still higher to a peak of 72; just twice the value of the 1961 peak. The number of individual grizzlies captured was 49, the greatest number ever recorded (Fig. 5). Thus, data on the number of individual grizzlies captured in campgrounds during the 3 years of revised management clearly show that the new management

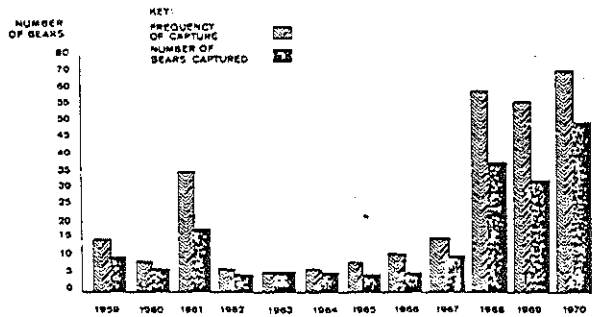

Fig. 5. Frequency of capture and number of grizzly bears captured in campgrounds.

No response needed.

practices have been creating problem bears that then must be dealt with by the Park administration. In Table 7, the frequency of capture and the number of individuals captured in campgrounds and developed areas during 1959 through 1967 was totaled and compared with similar data for 1968 through 1970. The rate of capture for 9 years (1959-67) was 117; for the past 3 years it was 190. The number of individual grizzlies captured for the same periods also increased.

Of the total number of grizzlies involved in campground foraging it is particularly revealing that 57 were captured during the 9 years prior to the rapid phase-out of the open-pit dumps, whereas 70 were captured during the first 3 years of phase-out (Table 7). Thus, from 1959 through 1967 an average of six grizzlies became campground foraging bears each year, but during the rapid cut-back in garbage (1968 through 1970), an average of 23 grizzlies became campground-oriented each year. Data in Table 7 also show that Grant Village, which was first opened to the public in 1967, presumably had no problem bears that year, as none were captured. The following years it was visited by grizzlies. Twenty-five were captured during the 3-year period of revised management. Similarly, no grizzlies were captured at Slough Creek, Tower Fall, Madison Junction, and Mammoth from 1959 to 1967, but grizzlies were captured at these campgrounds from 1968 to 1970.

We must conclude that the new bear management practices, programmed to quickly phase-out the open-pit dumps in Yellowstone without first adequately sanitizing the campgrounds, greatly increased the probability of bear-man conflicts as more grizzlies entered congested visitor areas. This program has rapidly "created" troublesome campground grizzlies. The administration's policy formulated to deal with this situation has been to kill or ship to zoos all two-time offenders entering campgrounds or developed areas within a successive 2-year period.

In 1969, the Natural Sciences Advisory Committee of the National Park Service met with Park administrators, biologists, and consultants to review grizzly bear management in Yellowstone National Park and to formulate a bear management policy and program (Natural Sciences Advisory Committee Report, 1969). The Committee summarized the management goals as follows:

1) To maintain populations of grizzly and black bears at levels that are sustainable under natural conditions as part of the native fauna of the Park.

2) To plan the development and use of the Park so as to minimize conflicts and unpleasant or dangerous incidents with bears.

3) To encourage bears to lead their natural lives with minimum interference by humans.

TABLE 7. Frequency of capture and the number of grizzly bears captured in campgrounds

Campgrounds and Developed Areas[a]	1959-67		1968-70[b]	
	Frequency of Capture	Individual Bears Captured	Frequency of Capture	Individual Bears Captured
Canyon Village	48	33	42	24
Lake	40	26	73	48
Old Faithful	9	9	23	17
West Thumb	17	11	7	6
Grant Village	-	-	30	25
Norris	1	1	2	2
Lewis Lake	0	0	1	1
Indian Creek	2	2	0	0
Slough Creek	0	0	3	3
Tower Fall	0	0	3	3
Mammoth	0	0	1	1
Madison Junction	0	0	5	3
Totals	117	82	190	133
Corrected totals[c]		75		124
Total individuals involved		57		70

[a]Canyon Village includes Canyon Village and Otter Creek Campgrounds. Lake includes Lake, Fishing Bridge, Bridge Bay, and Pelican Creek Campgrounds. Grant Village opened in 1967 when the National Park Service began phasing out open-pit dumps.

[b]Unmarked grizzly bears entering campgrounds during 1968 and 1969 could not be individually marked because of Park Service policy prohibiting marking of any animals in Yellowstone. Thus, in addition to marked animals, a minimum number of unmarked individuals, determined by criteria of sex, age, and time of capture, were recorded for the period.

[c]In 16 instances, bears were captured in two areas during a year. The corrected total of individual grizzlies captured per year corrects for this bias.

TABLE 8. Campground captures of five female grizzlies following the rapid phase-out of Trout Creek Dump, 1968-69

Bear No.	Year Marked	Date of First Capture in Campground	Interval in Years Between Marking & First Capture in Campground	Age at First Capture in Campground[a]	Number of Capture Areas	Frequency of Capture by Years	Number of Offspring Produced Between Marking & First Recapture	Status of Female 1969
34	1960	1969	9	19 ½	1	1969-1	6	Alive
39	1960	1968	8	13 ½	2	1968-2 1969-S	5	Alive
40	1960	1969	9	11 ½	1	1969-1	7	Killed for control
109	1961	1969	8	8 ½	1	1969-2	0	Alive
128	1962	1969	7	18 ½ Min	1	1969-1	10[b]	Alive

[a]Age in years — all bears were aged by cementum layer technique. Ages designated minimum (Min) represent minimum cementum layer age. (Craighead et al., 1970.)

[b]No. 128 produced three more cubs in 1970.

No response needed.

The ultimate objective agreed upon by all participants was the sanitary disposal of trash and garbage in a manner that would deny this food source to bears.

The report continued:

> But, in the meantime, there is a disagreement as to the sequence of steps leading to the elimination of garbage from availability to grizzlies. One view is to cut off all garbage quickly, forcing the bears to turn immediately to natural foods. The opposite contention is to phase out garbage feeding over a period of time, "weaning" the bears gradually. The issue hinges on which of these procedures will result in the least number of bears going into campgrounds.

In 1970, following the distribution of the Advisory Committee report, the Park continued its phase-out policy for garbage dumps by completely closing the pit at Rabbit Creek, which prior to this time attracted and held a population that fluctuated between 22 and 48 grizzlies. Our censuses showed an 8-year average of 32 grizzlies in the area during the summer months (Craighead and Craighead, 1967). Eight airline kilometers (5 miles) away a fenced sanitary land-fill dump was installed at Nez Perce Creek as a replacement for Rabbit Creek. With this accomplished, grizzlies with traditions of feeding at Rabbit Creek were completely and abruptly denied a long-established food source.

Movements of individual grizzlies in response to reduced food at the Trout Creek Dump during 1968-69. Five female grizzlies which frequented the Trout Creek Dump were color-marked between 1960 and 1962 (Table 8). They were captured in campgrounds or developed areas for the first time following the reduction of food at Trout Creek in 1968. The long interval between marking and first capture in a campground can be explained if these bears increased their daily movements and extended their home ranges in search of food. The home ranges of No. 39 and No. 40 had been established earlier by radiotracking (Craighead and Craighead, in Prep.a.).

No. 39 extended her home range in 1968 to include Lake Campground and the Bridge Bay-developed area. During 1968-69, she was captured five times at the Bridge Bay incinerator and twice in adjacent developed areas. In both years she was probably attracted there by odors from the incinerator.

We radiotracked No. 40 for 8 consecutive years (Craighead and Craighead, in Prep. b). While this female was radio-monitored, she was never tracked into a campground or developed area. However, she entered the Lake-developed area in 1969 and was shot.

Since grizzlies of all ages made initial campground entries in 1968 and 1969, we do not think that the advanced age of three of the five grizzlies listed in Table 8 was a factor altering their behavior and movements. They were in excellent condition when last captured; all had reproductive records. No. 128 had produced ten cubs prior to her capture in 1969. She bore three more in 1970 at a minimum age of 19 ½ – a total of 13 cubs during the 9 years she was marked. From 1960 to 1970, the five females bore a total of 28 offspring (Table 8). It is evident that management practices which "force" productive females into developed areas where they are subject to control could rapidly alter the population level.

Scarcity of the staple natural foods during 1968 and 1969 did not cause the movement, since the availability of these during the period was not importantly different from other years. Our data on the utilization of natural foods by grizzlies and on the relative abundance of these foods throughout a 12-year period cannot be presented here, but these fully support this conclusion. We, therefore, conclude that the five females recorded in Table 8, as well as 11 other marked grizzlies of both sexes, were captured for the first time in campgrounds in 1968 and 1969 primarily because of the acute food shortage at Trout Creek. Thirty-five

TABLE 9. Dispersal of 24 color-marked grizzlies and two recognizable cubs from Trout Creek following management changes at Trout Creek Dump during 1968 and 1969

	Campgrounds and Developed Areas Visited by Marked Grizzlies								
Marked Bear No.	Lake	Canyon Village	Grant Village	Norris	Cooke City Dump	Tower Dump	West Yellowstone Dump	Rabbit Creek Dump
7								X
10+(2)[a]						XXX		
30	X							
34					X			
39	X							
40	X							
88								X
109	X							
112		X						
128	X							
130			X					X
141	X	X						
144		X						
147								X
166							X	X
183	X							
188		X						
189								X
190							X	
194								X
201								X
207	X	X						
208	X	X						
210	X							
211	X			X				
213							X	X
217	X							
218								X
228		X						
236	X	X						
240	X							
241	X							
242					X			
256	X							
Totals	16	8	1	1	2	3	3	10

[a] The cubs of bear No. 10 dispersed with their mother and could be recognized.

No response needed.

unmarked individuals were also captured in campgrounds or developed areas for the first time.

Figure 6 and Table 9 show the movements from Trout Creek of 34 marked grizzlies and two recognizable cubs. Records of these movements were obtained by capturing the animals or by observing their individualized color markings. Sixteen individuals visited the Lake-developed area, eight entered Canyon Village, and ten moved to the Rabbit Creek Dump. Two moved to Cooke City; three, to Tower; three, to West Yellowstone; one, to Norris; and one, to Grant Village. Eight of the marked bears visited two campgrounds or developed areas (Table 9), thus accounting for the total of 44 bears shown in Figure 6.

Dispersal of individual grizzlies following the closure of Rabbit Creek Dump in 1970. Grizzlies inhabiting Rabbit Creek dispersed widely following the closure of that open-pit dump in 1970. Figure 7 shows the movements of 12 color-marked and two recognizable grizzlies to new feeding areas. All of these grizzlies were observed and recorded at Rabbit Creek for between 3 and 11 years prior to the closure (Table 10). Therefore, all could be considered resident members of this population unit.

Seven grizzlies moved 29 airline kilometers (18 miles) to the West Yellowstone Dump, which lies outside of the Park. Two joined the grizzlies at Trout Creek, 30.6 airline kilometers (19 miles) away; these also visited the West Yellowstone Dump. Grizzlies No. 2 and No. 8 moved 22.5 airline kilometers (14 miles) to the Grant Village Campground and developed area. Three grizzlies, including No. 2, moved to the Old Faithful area only 8 airline kilometers (5 miles) distant. Comparison of the 1970 census data taken at Trout Creek and West Yellowstone with other years suggests that many of the unmarked grizzlies from Rabbit Creek also moved to these other open-pit dumps.

In 1970 five grizzlies from Rabbit Creek were captured in campgrounds or developed areas and four were dispatched. None of these had previous campground records. The long intervals between marking and first capture in a campground or developed area (Table 11) show that the policy of rapidly closing the long-established open-pit dumps was still creating problem bears in Yellowstone. The official solution was still to dispatch the animal. There is

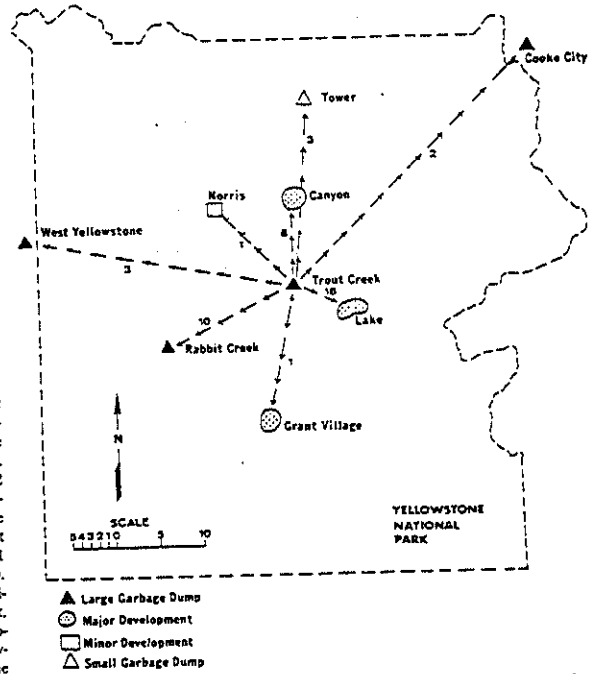

Fig. 6. Dispersal of 34 marked and two recognizable grizzlies following management changes at Trout Creek Dump during 1968 and 1969.

circumstantial evidence that No. 8 severely mauled a Park visitor in Grant Village on 3 September 1970. This color-marked animal had not been captured or observed in a campground during an 11-year period prior to this time.

The Park Service plans to completely close the Trout Creek Dump during the spring and summer of 1971. At the same time, the West Yellowstone Dump will be moved and fenced. This will disperse approximately 180 grizzlies in one season. This action, in all probability, will create more acute bear problems in campgrounds and developed areas in and near the Park than have existed in 100 years of Park history.

Discussion

Grizzly bears and man have coexisted in Yellowstone since the establishment of the Park in 1872. They have shared this environment during the past decade with about a 900,000-to-1 chance of confrontations leading to personal injury. The open-pit garbage dumps that came into existence with the establishment of Yellowstone Park have become traditional feeding areas for grizzlies. A long-term study showed that these dumps have altered the bear's behavior patterns at these sites, but they have not made grizzlies dependent on man or created the incorrigible animals that are a threat to the visiting public. On the contrary, the isolated dumps, with restricted public access, have effectively concentrated grizzly bears during the height of the visitor season. They have been extremely effective in reducing the probability of grizzly-man encounters and injury.

In order to induce the Yellowstone grizzlies to adopt more natural feeding

No response needed.

TABLE 10. Movement of grizzlies following the closure of Rabbit Creek Dump in 1970

Bear No.	Sex	Number of Years Previous Observed at Rabbit Creek Dump	New Area Visited[c]	Airline Distance from Rabbit Creek Dump to New Area (km)
2	M	11	Old Faithful	8.05
			Grant Village	22.54
8	F	11	Grant Village	22.54
57	M	10	West Yellowstone Dump	28.98
109	F	7	West Yellowstone Dump	28.98
			Trout Creek Dump	30.59
147	M	7	Trout Creek Dump	30.59
164	F	7	Old Faithful	8.05
171	M	6	Old Faithful	8.05
213	M	5	Trout Creek Dump	30.59
217 A	M	3	West Yellowstone Dump	28.98
			Trout Creek Dump	30.59
219 A	M	3	West Yellowstone Dump	28.98
224 A	M	3	West Yellowstone Dump	28.98
226 A	M	3	West Yellowstone Dump	28.98
UM[a]	M	4	West Yellowstone Dump	28.98
UM[b]	M	10	Old Faithful	8.05

[a]This male identified by size, conspicuous wound over left eye and white patches of hair on shoulders. (UM = unmarked.)

[b]Large male identified by a wound exposing the upper left canine. (UM = unmarked.)

[c]New area visited was determined by observation or capture of marked or recognizable animals.

habits while preserving an optimum grizzly bear population and adequately protecting Park visitors, the long-established feeding sites must be phased out over a period of many years. Thorough sanitation of campgrounds and developed areas, both inside and outside the Park, must precede the closure of the major open-pit dumps in Yellowstone. In 1968, the Yellowstone administration initiated a management program; its major objective of rapidly eliminating open-pit garbage dumps has drastically disrupted long-established

TABLE 11. Campground captures of five grizzlies following the closure of Rabbit Creek Dump, 1970

Bear No.	Sex	Year Marked	Interval in Years Between Marking and First Capture in Campground	Age at first Capture in Campground	Capture Areas	Frequency of Capture	Status in 1970
2	M	1959	11	15 ½ - 16½	Old Faithful Grant Village	2	Killed for control
8	F	1959	11	19 ½ ± 2	West Thumb Grant Village	2	Killed for control
164	F	1963	7	12 ½	Old Faithful	1	Alive - Yellowstone
171	F	1964	6	9 ½	Old Faithful	3	Zoo for control
UM[a]	M	1960	10	22 ½ - 25 ½	Old Faithful	1	Killed for control

[a]Large male unmarked but identifiable during a 10-year period by a wound exposing the upper left canine.

[b]Exact age unknown.

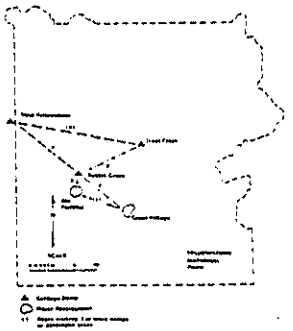

Fig. 7. Movement of 14 marked or recognizable grizzlies following closure of Rabbit Creek Dump, 1970.

grizzly bear patterns of feeding and movement. This has forced grizzlies into areas of high visitor use and vastly increased the probability of bear-man conflicts. Rapid elimination of "artificial" food at the dumps is not forcing the Yellowstone grizzlies to quickly adjust to an all-natural food diet, but is instead moving them into unsanitized areas inside and outside of the Park.

Since practically all of the grizzlies in the Yellowstone area have fed at open-pit garbage dumps during some time in their lives, a "wild population" cannot be made by denying this food and then dispatching all grizzlies that find it elsewhere in campgrounds and developed areas of the Park. The present rapid phase-out policy, combined with the elimination of two-time offenders, could reduce the grizzly bear population of the Yellowstone Park-National Forest Ecosystem to a dangerously low level in a relatively short period of time. We believe that grizzly bears and man can co-exist in this vast ecosystem if management is tailored to the facts of bear behavior, if all campgrounds and developed areas are sanitized, if open-pit dumps are slowly phased out, if the visiting public is willing to accept a small risk, and if all agencies having a vested responsibility in solving the problem work cooperatively toward common objectives.

Acknowledgments

This paper would not be possible except for the team assistance of many people and the financial support of numerous organizations.

No response needed.

e extend special thanks and credit ay Sumner, Harry Reynolds, Jim r, Maunce Hornocker, and Robert , who first as students, then as rch associates, worked closely with n the field and in the laboratory. W. O'Gara critically reviewed the nscript. Special thanks are also due Lemuel Garrison, former Superinent of Yellowstone National Park, C. R. Gutermuth, Vice-president, ife Management Institute. Their rstanding and encouragement of research made it possible for us to ete this grizzly bear study and to maintain the continuity of effort so essential to long-term investigations.

We gratefully acknowledge the following organizations for financial aid: National Science Foundation, National Geographic Society, Philco Corporation, Bureau of Sport Fisheries and Wildlife, Environmental Research Institute, National Park Service, University of Montana, Wildlife Management Institute, Montana Fish and Game Department, Boone and Crockett Club, New York Zoological Society, and Atomic Energy Commission.

EARTH SATELLITE CORPORATION

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Dr. Frank J. Wobber
Earth Satellite Corporation
1771 N Street, N.W.
Washington, D.C. 20036

CIRCLE NO. 857 ON READERS' SERVICE CARD

References

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Storage and Retrieval of Biological Information

The course of lectures given in the Autumn of 1970 on this topic, at the Linnean Society in conjunction with the Committee on Biological Information, will be reprinted in the September issue of the *Biological Journal* of the Society. Lists of libraries, abstracts and indexes, data and information retrieval services in pure and applied biology, and culture collections, etc., will be included. As there will be a limited number of extra copies printed, at 2 pounds, 50 pence, requests should be sent promptly to: Editorial Secretary, Linnean Society of London, Burlington House, Piccadilly, London W1V 0LQ, England.

No response needed.

12/23/81

RECEIVED

DEC 10 1981

CENTRALIZED SERVICES

ENVIRONMENTAL IMPACT ASSESSMENT FORM
Request for Environmental Impact Evaluation

TO: George Warn
Montana Department of Commerce

FROM: Montana State Clearinghouse
Office of Budget and Program Planning
Capitol Annex
Helena, Montana 59620

Environmental Impact Assessment Title: Revised Draft Environmental Impact Statement - Grizzly Bear Management Program, Yellowstone National Park, DES 81-49

Clearinghouse File Number: MT811208-204-E

EIS Agency Sponsor: U. S. Dept. of Interior
National Park Service

SPONSOR ADDRESS: Rocky Mountain Region
P. O. Box 25287
Denver, CO 80225

CONTACT PERSON: Karen Green, A-95 Coordinator

COMMENTS DUE BY: February 1, 1982

The Above Named Statement

X is enclosed for your review and comment
_____ should have been received by your agency from the sponsor
_____ is available at the Clearinghouse Office for review (only one copy was received).

Please evaluate the assessment for its consistency and fullfillment of statewide and local objectives related to:

1. The Environmental impact of the proposed action.
2. Any adverse environmental effects which cannot be avoided should the proposal be implemented.
3. Alternatives to the proposed action.
4. The relationship between local short-term uses of man's environment and maintenance and enhancement of long-term productivity.
5. Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

IF YOUR AGENCY HAS COMMENTS ON THE ENVIRONMENTAL IMPACT ANALYSIS, PLEASE SEND THE COMMENTS DIRECTLY TO THE AGENCY SPONSOR AND FORWARD A COPY OF THE COMMENTS TO THE STATE CLEARINGHOUSE.

IF YOUR AGENCY DOES NOT INTEND TO COMMENT, PLEASE CHECK THE BOX BELOW AND RETURN THIS FORM TO THE STATE CLEARINGHOUSE.

X NO COMMENT

Reviewer's Signature Michael J. Stephens

Title Exec Director Date 1-29-82

No response needed.

WYOMING
EXECUTIVE DEPARTMENT
CHEYENNE

ED HERSCHLER
GOVERNOR

February 2, 1982

Mrs. Lorraine L. Mintzmyer
Regional Director, Rocky Mountain Region
National Park Service
655 Parfet Street
P.O. Box 25287
Denver, CO 80225

Dear Mrs. Mintzmyer:

The revised draft environmental impact statement for the Grizzly Bear Management Program in Yellowstone National Park has been circulated for review by state agencies. Copies of their comments are enclosed for your consideration and use.

44 The objectives of the present Yellowstone grizzly bear management program appear to properly balance the ecosystem preservation and visitor use accommodation mandates of the Park Service. The present management program should be continued as proposed under Alternative A. The program should be reviewed on a regular basis and refined, as necessary, to reflect ongoing bear research results and management experience. The essential elements of the management program appear to be continued research, control of garbage and man-generated food sources, regulation of visitor distribution when necessary and public information/education efforts. These elements deserve continued budget and administrative support.

45 I draw your attention to the comments provided by our Game and Fish Department which discuss the need to fully integrate in-Park grizzly bear management efforts with management activities in areas outside the Park boundaries. The Park Service must continue to closely coordinate their efforts with the activities and objectives of the respective state wildlife agencies and federal land management agencies having jurisdiction within the Yellowstone region. In particular, the proper role of sport hunting in the overall Yellowstone region grizzly bear management program deserves increased consideration.

44 The National Park Service will continue to seek budgetary support for the grizzly bear management program.

45 The Guidelines, the Recovery Plan, and the assistance provided by the National Park Service to both the States of Wyoming and Montana for translocating bears in 1981 demonstrates our commitment to continuing such coordination.

Central to the success of the grizzly bear management program is the accurate documentation of population size and population dynamics. The essential nature of accurate census and population monitoring efforts has been stated time and again by scientists involved in grizzly bear research. It is my understanding that the Interagency Grizzly Bear Study Team is presently requesting funding for an intensive sampling effort to better determine the grizzly bear population status in the Yellowstone region. I believe that such research data is critical to the successful management of the region's grizzly bear population, and I support the study team's efforts. I commend the Park Service's cooperation with and participation on the study team and urge the continuation of these commitments. Further, I urge the Park Service to react favorably and support the funding requests associated with the proposed short-term saturation trapping effort.

46

Thank you for the opportunity to review and comment on this program. Please keep me informed of any further progress in this effort.

Yours sincerely,

EH:pcl

Enclosures

cc: Mr. John A. Townsley, Superintendent
Yellowstone National Park
Mr. Earl Thomas, Director
Wyoming Game and Fish Department

46 The National Park Service will continue to request funds as appropriate to support relevant research.

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Game and Fish Department

CHEYENNE, WYOMING 82002

EARL M. THOMAS
DIRECTOR

February 2, 1982

DEIS 901/Ll Grizzly Bear
Management Program
Yellowstone NP, Idaho,
Montana, Wyoming, USDI/NPS
Revised DEIS.

Mr. Dick Hartman
State Planning Coordinator
2320 Capitol Avenue
Cheyenne, Wyoming 82002

Dear Mr. Hartman:

The revised Draft DEIS is greatly improved over the original DEIS published in 1974. The revised DEIS realistically states the alternatives and the impacts of those actions. To perpetuate the grizzly bear, we agree that Alternative A, which is to continue the present management program, is the preferred alternative. The outcome of present management has been less human-grizzly conflicts, fewer control actions, and a decline in grizzly mortalities within the Park. Alternative B would further restrict visitor use, but we do not feel this is presently necessary. Alternative E, artificially feeding grizzlies, is unrealistic and undesirable. It is really little different from the open dumps of the past. We do not support the no action alternative because it is a step backwards, to open dumps and increased man-bear conflicts. Finally, we do not believe it is acceptable to eliminate grizzly bears from National Parks.

47 1. The population figures quoted from the Interagency Study Team are primarily from 1974 publications (pp. 31 and 48). Other literature from 1981 is quoted, but later population data are not, even though the data are different than the 1974 data.

48 2. On page 31 of the report, Knight (pers. comm. 1979) is quoted as saying "Reports indicate dispersal of grizzlies beyond previously reported habitat, which would suggest increasing population." Knight has told us in a telephone conversation that dispersal of grizzlies beyond previously reported habitat has been documented, but this has not been interpreted to indicate an increasing population.

49 3. An estimate of 500-650 black bears is given for the Park (p. 43). The basis for this estimate and some indication of the supportative data should be given.

47 The data has been updated.

48 The section on bear population size and density has been revised to use current data. We concur with the comment.

49 The text has been revised. See page 42.

50 4. It is stated in the DEIS that food is not a limiting factor for the grizzly bear (p. 21). This contradicts research data. There are many other strong arguments against artificial feeding of grizzlies, however, and this criticism should not be interpreted as an endorsement of supplementary feeding of bears.

51 The most serious problem with this DEIS is that it attempts to examine management of grizzlies only in Yellowstone, without considering the fact that all of the grizzlies in the Yellowstone ecosystem are one population. Management of grizzlies should be a coordinated effort among the three states and two National Parks, and should include limited sport hunting outside the Parks. Transplanting problem bears is usually not successful with bears older than yearlings, and often the problem is transplanted along with the bear. Placing such bears in areas now unoccupied by grizzlies enhances the chances of human-bear conflicts because often the reason that habitat is unoccupied is past human-bear conflicts or excessive human disturbance which has reduced habitat quality.

It is difficult to believe that grizzly bear management inside the Park can be successful unless it is integrated with management activities in areas outside park boundaries. The DEIS recognizes that mortalities are occurring despite threatened status of grizzlies. In most cases, those mortalities have occurred because of human-bear conflicts. Resolution of those conflicts in portions of the Yellowstone ecosystem outside Park boundaries could be accomplished by taking the offending bear legally through hunting.

Other than the fact we do not feel management of grizzlies in Yellowstone National Park can be accomplished without coordinated management outside the Park, we find little to criticize in the DEIS.

Please forward these comments to the National Park Service and contact us if we may be of further help.

Sincerely,

Bill Morris

BILL MORRIS,
ASSISTANT DIRECTOR
WYOMING GAME AND FISH DEPARTMENT

WDD:HBM:mlr

cc: Game Division
cc: Fish Division

50 The text has been revised. See pages 12-13 and 45-46.

51 We agree. See page 48. Additionally, the Guidelines and the Recovery Plan also deal with grizzly bear management in the entire Yellowstone ecosystem.

81-153

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Wyoming Recreation Commission

604 EAST 25TH STREET CHEYENNE, WYOMING 82002

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Sheridan 82801

JAN L. WILSON
Director
777-7695

December 31, 1981

Mr. Dick Hartman
State Planning Coordinator
Wyoming State Clearinghouse
2320 Capitol Ave.
Cheyenne, WY 82002

Dear Mr. Hartman:

The Wyoming Recreation Commission concurs with the National Park Service that Alternative A is the best management program for the Grizzly Bear in Yellowstone National Park. The program allows Yellowstone to return to its more natural ecosystem. This benefits both the bears and the majority of park visitors.

Sincerely,

John Keck

John Keck
Parks Planner

JK/lr

State Identification # - 81-153

No response needed.

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Wyoming Recreation Commission

604 EAST 25TH STREET CHEYENNE, WYOMING 82002

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1017 Victoria
Sheridan 82801

December 22, 1981

Dick Hartman, SPC
2320 Capitol
Cheyenne, Wyoming 82002

RE: A-95#81-153(b)

Dear Mr. Hartman:

The Yellowstone National Park Grizzly Bear Management Program was received in this office. Thank you for giving us the opportunity to review the materials.

Our staff archeologist has reviewed these materials. He indicates that adequate provisions have been made for cultural manifestations Therefore, the Wyoming State Historic Preservation Officer (SHPO) recommends cultural clearance of the project for the purposes of applicable state and federal laws.

If you have any questions concerning this recommendation please contact the appropriate member of our staff.

Sincerely,

Mark G. Junge, Chief
Resources Division and
Deputy SHPO

FOR:
Jan L. Wilson, Director
and State Historic Preservation Officer

MGJ:tjh

No response needed.

WYOMING RECREATION COMMISSION

STATE HISTORIC PRESERVATION OFFICE

REVIEW AND COMPLIANCE

Interdisciplinary Staff Comments

Archeology • History • Historical Architecture • Recreation Planning

TO: Mark G. Junge, Chief

FROM: Richard L. Bryant, Archeological Review and Compliance Officer

DATE: December 21, 1981 District #5

RE: (A-95/81-153) Yellowstone National Park Grizzly Bear Management Program, Revised DEIS.

I have reviewed the DEIS. The proposed management program will have no known affects on historic or archeological properties in the Park.

No response needed.

RLB:tjh
cc: JLWILSON,MGJUNGE,RLBRYANT,RF.

DEC 16

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

State Engineer's Office

BARRETT BUILDING CHEYENNE, WYOMING 82002

December 15, 1981

MEMORANDUM

TO: Dick Hartman, State Planning Coordinator

FROM: Louis E. Allen, Water Resources Engineer LEA

SUBJECT: State Identifier No. 81-153, Grizzly Bear Management Program - Yellowstone National Park, Revised DEIS.

We have no comment on the subject Revised DEIS, since it does not appear that it would have any bearing on the development or use of Wyoming's water.

Thank you for the opportunity to examine this Revised DEIS. Your referral memorandum is being returned as requested.

LEA/ht

cc: George L. Christopulos
State Engineer

No response needed.

IDAHO DEPARTMENT OF FISH AND GAME
600 South Walnut • Box 25
Boise • Idaho • 83707

January 4, 1982

Ms. Karen L. Green
Rocky Mountain Region National Park Service
Box 25287
Denver, Colorado 80225

Dear Ms. Green:

The following comments are in response to the Environmental Impact Statement for Grizzly Bear Management Program in Yellowstone National Park revised draft.

52 A general comment and request regarding this draft statement is that all current data should be used throughout the report. In some areas, information from 1974 is used, in some areas 1978, and others 1980. An example is the bear population information included in the Yellowstone Grizzly Bear Investigations Annual Report of the Interagency Study Team 1980 which has not been used.

Summary page, paragraph 2: "--the principal impacts are..."

1. "The entire grizzly bear population in Yellowstone National Park will become wild and free ranging and an integral part of the Yellowstone ecosystem as it was in the past..."

2. "The grizzly bear population will experience temporary disturbance associated with readaptation to natural food resources..."

53 Comment: We are of the opinion the entire population of grizzly bear in Yellowstone is a part of the ecosystem and dependent upon the natural food sources. The way it is written above leaves a question regarding the status of the population.

The following comments refer to Alternative A, Continue Management Program (the proposal). We will not comment on Alternatives B,C,D and E as none are acceptable. Comments on the rest of the document will follow those on Alternative A.

• EQUAL OPPORTUNITY EMPLOYER •

52 All relevant data has been updated throughout the document.

53 We concur. The text has been revised.

54 Page 10, paragraph 3: it states an average of 4.25 grizzlies being killed outside the park during the past 4 years. Does this refer to the four years prior to the draft EIS published in 1974 or the four years prior to the revised draft published in 1981?

55 Page 10, No. 9: Critical habitat proposal comment:

Implementation of Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area precludes the need for critical habitat designation providing the 5 management situation recommendations in that document are adhered to by all management agencies in all areas.

56 Page 15, paragraph 8: This paragraph implies that the $275,000 expended for control of garbage is all done for the benefit of grizzly bears. It should be explained what portion of this garbage budget actually is for the benefit of the grizzly bears.

57 Page 16, first sentence: What agencies are required and who requires them to engage in cooperative programs for grizzly management?

58 Page 26, paragraph 4; page 27, paragraph 1:

In one of these areas there should be a note regarding the grizzly bear killed in Colorado in 1979.

59 Page 31, paragraphs 2, 3 and 4:

This is obsolete information regarding the grizzly bear populations within the park and surrounding it. The most recent data which should be used is found in pages 24 through 29 of the Interagency Study Team Report - Knight, 1980. In that report on page 27, paragraph 1, data indicate few bears are reaching older age classes and there exists an adult, subadult ratio of 32:68 in Yellowstone at the present time. Age ratios from highly exploited black bear populations studied in Idaho (Beecham 1980) indicate a 50:50 adult, subadult ratio. Therefore, the Yellowstone population of grizzlies apparently is being exploited very heavily. From observed animals and known age and sex ratios, Knight et al, estimate 247 bears in the population (based on small sample sizes).

60 Page 34, paragraph 2: This paragraph is not consistent with Table 2, page 35. One includes 1976 data, the other 1980 data.

61 Page 46, paragraph 4; page 47, paragraph 1:

On page 46 it is indicated that (based on control actions) population changes cannot be documented. On page 47, it is stated available data indicate the population decline during and immediately following the dump closure was temporary and that replacement of losses has occurred. In neither case was up-to-date data on the bear population used, as in Knight et al. 1980, but the number of

54 The data has been updated and the text revised. See page 14.

55 The text has been revised. See page 14.

56 The $275,000 included $100,000 for garbage disposal, plus sums for handling problem bears, salaries and personal services related to the bear management programs, and printing literature related to the program. The entire garbage collection program for the park was $415,000 in 1981. The text has been revised. See page 58.

57 We concur. The text has been revised. See Table 1.

58 Southwestern Colorado is noted. The isolated kill in 1979 is addressed in the Recovery Plan.

59 The most recent data is used in the final EIS and the text has been revised. See pages 28 and 47-48.

60 The paragraph (now on page 31) is describing visitation trends and is correct as written. 1981 data has been added to Table 2.

61 The text has been revised, and current data used. See pages 28, 45, and 46.

bears killed in the park were used as an indicator. This is not an acceptable way to make this type of evaluation.

Paragraph 3: It is stated that only one grizzly bear being removed from the population this year may be insignificant.

62 Comment: Based on the current population data indicating this is an extremely overexploited population and the fact grizzlies have such a low reproductive rate, every bear taken from the population, and especially females, at this time has a highly significant impact.

63 Page 48, paragraph 3 and 4: Again, please use the most recent data available as published in Knight et al. 1980.

64 Page 51, item 4: Does the National Register of Historic Places still exist?

In summary, we support your philosophy that the entire "Yellowstone" grizzly bear population must be managed jointly by all agencies in the three states and the park which have jurisdiction over areas where bears are found during some period of the year. If anything less is done, it will likely be to the detriment and possible demise of the bears. Thank you for the opportunity to comment on this document.

Sincerely,

Jerry M. Conley
Director

cc: Program Coordination
Paul Cunningham, Governor's Office

62 The text has been revised. See page 48.

63 The text has been revised and current data used.

64 Yes, the National Register still exists, and is administered by the National Park Service.

NPCA

February 10, 1982

Ms. L. Lorraine Mintzmeyer
Regional Director
National Park Service
P.O. Box 25287
Denver, Colorado 80225

Dear Director Mintzmeyer:

The National Parks & Conservation Association wishes to submit belated comments on the Revised Draft Environmental Impact Statement for the Yellowstone Grizzly Bear Management Plan (RDEIS).

We support the objectives and purposes of the existing program which is given as the proposed alternative in the RDEIS and we believe that they serve as a good base for a grizzly bear management plan. The RDEIS, however, does not successfully build upon this base. It fails to include current research data; it does not provide adequate criteria for bear control actions; and it contains contradictions in provisions and data.

65 The most serious inadequacy of the RDEIS is that it does not provide conclusive evidence that the on-going program is proving effective in restoring the grizzly population. Unfortunately, it may be that even the most protective program for the bear within the park may not sufficient in restoring the Yellowstone ecosystem's grizzly population. Consequently, we believe that the Park Service should seriously consider supporting the following recommendation of a special task force of the National Park System Advisory Board,

> With burgeoning pressures of the present and future in view and with growing indications that grizzlies are being poached for the commercial market. we recommend that the status of this species south of Canada be changed from threatened to endangered.

The following are page by page comments on the RDEIS:

Preface: The controversy surrounding the sudden dump closures may be muted by time, but the impact upon the bear, especially the subsequent need to destroy numerous animals, should not be forgotten. We hope that the Park Service not only realizes, but more importantly, will remember the deleterious effect sudden habitat alterations have upon a species.

National Parks & Conservation Association, 1701 Eighteenth Street, N.W., Washington, D.C. 20009
telephone (202) 265-2717

65 The Recovery Plan by USFWS, approved January 29, 1982, deals with the status of the grizzly bear. This status is not within the purview of this final EIS, but is more properly the jurisdiction of the USFWS.

66 The RDEIS should state up front that it is adhering to the Management Situation 1 provisions from the Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area (hereafter referred to as Guidelines). Furthermore, it would be extremely helpful if the Management Situation 1 pages from the Guidelines and the Draft Grizzly Bear Recovery Plan were appended to the RDEIS. These are critical background materials with which to measure the adequacy of the RDEIS.

II. A. 2.

67 p. 2: We believe "esthetic" (sic) is an inappropriate term by which to describe the value of the grizzly. Aesthetic is defined by Webster's as "relating to or dealing with the beautiful." Granted grizzlies are magnificent and beautiful creatures, but it is far more important to educate the public as to the importance of the grizzly to its environment. We recommend that "esthetic" be replaced with "ecological."

68 p. 4: The fourth paragraph states that "Backpackers will be encouraged to avoid areas known to contain relatively high densities of grizzly bears." In sec. II. A. 3. (p. 5), it states that "Backcountry campsites and/or trails being frequented by bears may be closed to public use until the bear is not longer an apparent hazard." Together these statements are somewhat confusing as to when backpackers will be permitted to enter bear country. We recommend that the policy state that backpackers will be encouraged to avoid areas known to be frequented by grizzlies and that when a grizzly is actively occupying an area, the area will be closed.

II. A. 3.

69 p. 4: What does it mean to "bear-proof" a campground? Since fencing has been determined to be inappropriate and expensive (p.56-57) we are assuming that other measures are being implied here. Does the term only refer to the provision of bear-proof trash receptacles and food storage containers?

II. A. 4.

70 p. 5: The regulation (50 CFR 17.40) cited in the first paragraph of this section requires that "The regulation of the Nat'l Park Ser. govern all taking of grizzly bears in the National Parks." To our knowledge the NPS does not have any regulations governing the taking of

66 We concur. See the "Purpose and Need" section.

67 "Ecological" has been included in the text, but we have kept "aesthetic" as also an important value.

68 The text has been changed. See pages 4-8.

69 The paragraph has been deleted as redundant.

70 See the USFWS letter of February 24, 1982 (item 3) in the Appendix. The text has been changed to cite the appropriate subsection of Title 50 of the Code of Federal Regulations (CFR).

grizzlies. Upon what regulatory authority is the National Park Service relying to comply with 50 CRF 17.40?

71 p.6: Baited traps should not only be posted with warning signs, but the area should be closed to humans as recommended in the Guidelines (p. 17). In addition, we believe that all experimental methods of trapping, fencing and repelling should not only be cleared by the superintendent, but also by the Office of Endangered Species.

72 Natural behavior should be more thoroughly defined. At the least, this provision should include the definition of "nuisance bear" from the glossary of the Guidelines.

73 The provision which states that bears being removed from the system may be dispatched if not wanted by zoos or reestablishment programs allows the carcass to be "processed as a scientific specimen or returned to the ecosystem." This provision is in conflict with a statement made later in IV. B. 1. that requires all bears killed during control actions to be used as scientific specimens (p. 52). The great need to understand the grizzly necesstiates study whenever possible. Therefore, we urge that all carcasses be processed for scientific study.

74 p. 7: Anyone is permitted to kill a grizzly in an emergency situation according to this provision. What constitutes an emergency? This provision could be used as an excuse for needless grizzly killing unless a strict definition of emergency is provided. Although we believe that each bear should be judged on an individual basis, what general criteria will a superintendent use to decide when a bear should be destroyed?

II. A. 6:

75 p. 7: What is going to be done with the statistics once gathered? We recommend that the management plan detail how information will be transmitted to appropriate agencies such as the Interagency Grizzly Bear Study Team (IGBST) and the Office of Endangered Species. There also is no mention of the computerized Bear Information Management System that the Park Service established several years ago for the collection and evaluation of bear information. How is Yellowstone participating in this system?

71 We believe the last two sentences of the paragraph indicate the immediate site is closed and conforms to the Guidelines. See page 9.

We believe the Section 7 biological opinion from the USFWS concerning this EIS constitutes clearance by the Office of Endangered Species, an office within USFWS.

72 See response 32.

73 The text has been revised. See page 10.

74 The text has been revised. See page 10.

75 The statistics become part of the permanent park files and are provided to the Interagency Grizzly Bear Study Team and to the Office of Endangered Species as requested. Yellowstone National Park has its own computer system for ongoing management within the park and does not participate directly in the computerized Bear Management Information System (BMIS). However, the park statistics are available to BMIS upon request.

II. A. 8. a.

76 p. 9: Are the sanitary landfills outside the park that are for the disposal of park refuse also outside probably grizzly habitat? It is important to the naturalization of the grizzly population that it be prevented from using artificial food sources, not only within the park, but outside the park as well.

II. A. 8. b.

77 p. 10: The Yellowstone Grizzly Bear Management Plan should state that it will seek to meet the requirements of the Grizzly Bear Recovery Plan when it is finalized.

II. A. 8. c.

p. 10: This section merely skims over the most serious problem facing the Yellowstone grizzlies--illegal hunting. Since all the grizzlies within the Yellowstone ecosystem are believed to constitute one population, any loss, whether inside or outside the park, affects the recovery of the park's bears.

78 The 4.25 grizzlies killed outside the park should be identified as the number verified and not implied as the absolute number. It is generally known that the number of grizzlies killed outside the park for predator control or trophy-hunting is much higher than 4.25 annually. The RDEIS should make some statement as to the inability to accurately determine the actual number of bears killed outside the park. This section should also mention that Wyoming has requested permission to open a grizzly hunting season.

II. A. 9.

79 p. 10: This section is the only place in the document that discusses the legal requirement to define critical habitat and it places the responsibility upon the FWS. According to the Guidelines (p. 1), the Park Service is also required to determine critical habitat for the grizzly upon its own lands. Discussion should be included that explains any process the Park Service or the Interagency Grizzly Bear Study Team is now engaged in to delineate critical habitat within Yellowstone and should give an approximate date for completion of that process.

II. A. 13.

80 p. 15: What data do you have to confirm the statement that,

76 The West Yellowstone landfill is the only refuse disposal site within probable grizzly bear habitat, but it is fenced and inaccessible to the bears. We concur with the statement about preventing use of artificial food sources both within and outside the park.

77 See the "Purpose and Need" section. The text has been changed. See pages 1 and 14.

78 The text has been revised. See page 14. The question of hunting outside the park is also found on page 48 and is also addressed in the Guidelines and in the Recovery Plan.

79 The text has been revised. See page 14.

80 Research studies indicate the information concerning cubs. (See Stohes, 1970 as cited in Cole, 1976.)

"Fewer cubs would be killed in encounters with other bears."?

81 Further on in this section, Yellowstone's bear management program is stated as costing $275,000. This amount is slightly more than 3% of the park's 1981 operating budget of $9.1 million. We do not believe it is accurate to characterize the "rigid control of garbage and the extensive public information efforts" as consuming "a major portion of the park's operating budget."

82 An impact not mentioned in this section is the limiting effect a protective bear management program will have upon the siting of future visitor facilities.

III. B.

83 p. 26: More current data on backcountry visitation should be available.

III. E.

84 p. 29: This entire section is inadequate and based on outdated and questionable data. At a minimum, we suggest that the information in the report by L.J. Roop that appeared in the Annual Report of the Interagency Study Team 1978-79 appear in this section. It is difficult to imagine how effective the management plan will be when the population information it apparently is based upon is so weak.

III. F. 3.

85 p. 39: This section could be more current with the addition of information for the survey conducted in 1979, by the Fish and Wildlife Service and Yale School of Forestry entitled, "Public Attitudes Toward Critical Wildlife and Natural Habitat Issues." The pages of the survey report pertinent to the grizzly and backcountry use have been attached.

IV. A. 1. a.

86 p. 47: Please cite data that indicate that the population decline during and immediately following the dump closures was temporary and that replacement of losses has occurred. We believe that the bulk of the available data indicate the contrary.

81 The text has been revised concerning the funding of the bear management program. See page 58.

82 We concur, and have added appropriate language in Table 1.

83 The text has been updated. See page 36.

84 This section has been revised to include the latest data from the Interagency Grizzly Bear Study Team's annual report. See page 28.

85 We concur. The text has been amended. See page 38.

86 The text has been revised. See pages 45-46.

L. Lorraine Mintzmeyer
February 10, 1982
Page Six

IV. B. 1.

87 p. 52: Specific rules should be established determining when, where and how grizzly viewing may take place. Besides being potentially dangerous, this type of activity could also be disruptive to the bears themselves unless carefully monitored.

Thank you for this opportunity to review this very important wildlife management plan.

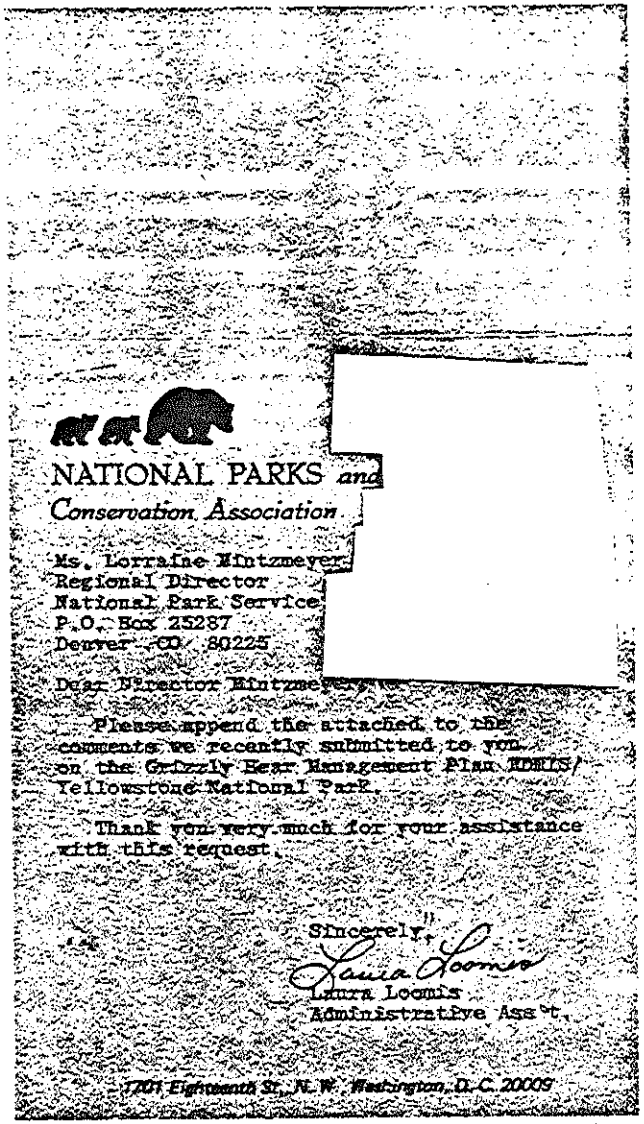
Sincerely,

Laura Loomis

Laura Loomis
Administrative Assistant

Attachment

87 Guided tours are no longer applicable. The text has been revised as appropriate. See page 53.



NATIONAL PARKS and
Conservation Association

Ms. Lorraine Mintzmeyer
Regional Director
National Park Service
P.O. Box 25287
Denver, CO 80225

Dear Director Mintzmeyer:

Please append the attached to the comments we recently submitted to you on the Grizzly Bear Management Plan EDEIS/ Yellowstone National Park.

Thank you very much for your assistance with this request.

Sincerely,

Laura Loomis

Laura Loomis
Administrative Asst.

1701 Eighteenth St., N.W., Washington, D.C. 20009

No response needed.

the very groups presumably opposed to modern wildlife management efforts expressed even greater disagreement. For example, 60 percent of humane-related organization members and 61 percent of anti-sport hunters approved of management efforts to control populations of waterfowl and deer.

The results of Table 54 and the bar graphs in Figure 32 deal with two additional wildlife management issues: wildlife law enforcement and wildlife education efforts. Regarding wildlife law enforcement, the public overwhelmingly supported strict enforcement and severe penalties for illegal wildlife activities involving the killing of animals. Indeed, only 11 percent disagreed with the notion of stiff fines and even prison sentences for repeated offenders. The second finding in Table 54 and Figure 32 reveals substantial public support for federal wildlife education efforts, with only 24 percent advocating little time and money being spent in this area. Table 55 indicates limited public support for expanding urban wildlife programs, although 60 percent of respondents from areas of more than one million population were in favor.

No response needed.

F. BACKCOUNTRY USE AND PARKS

This section deals with the relations of people and wildlife in backcountry, primarily park areas. This represents an issue of increasing concern as recreational use in public areas increases, and as mineral and other resource development pressures grow.

The first finding in Table 56 deals with the issue of bear/people conflicts in parks. The results clearly indicate the public's preference for nonlethal solutions to the problem, including bear relocation efforts despite the great cost involved (38 percent in favor) and restrictions on human access to areas where bears are likely to be (39 percent). Only 16 percent

TABLE 54

WILDLIFE LAW ENFORCEMENT AND EDUCATION X GENERAL PUBLIC

EGAL KILLING OF WILDLIFE SHOULD RESULT IN STIFF FINES AND, IF DONE RE-TEDLY, EVEN PRISON SENTENCES.

ONGLY REE	AGREE		SLIGHTLY AGREE	SLIGHTLY DISAGREE		DISAGREE	STRONGLY DISAGREE
34)	(1056)		(342)	(104)		(113)	(65)
.9	43.0	87	13.9	4.2	11	4.6	2.6
						Z = 37.65, P = ≤ .0001	

: FEDERAL GOVERNMENT SHOULD SPEND VERY LITTLE TIME AND MONEY ON TRYING EDUCATE THE PUBLIC ABOUT WILDLIFE ISSUES AND PROBLEMS.

RONGLY REE	AGREE		SLIGHTLY AGREE	SLIGHTLY DISAGREE		DISAGREE	STRONGLY DISAGREE
38)	(276)		(233)	(361)		(961)	(464)
.6	11.3	24	9.5	14.7	73	39.1	18.9
						Z = 24.36, P = ≤ .0001	

No response needed.

RESPONSES

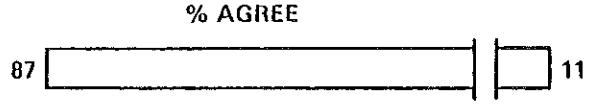
No response needed.

COMMENTS

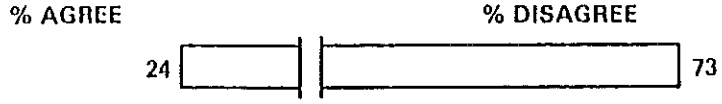
FIGURE 32

WILDLIFE LAW ENFORCEMENT AND EDUCATION X GENERAL PUBLIC

Illegal killing of wildlife should result in stiff fines and, if done repeatedly, even prison sentences.



The Federal Government should spend very little time and money on trying to educate the public about wildlife issues and problems.



-124-

supported limits on park visitation to minimize the problem, and even fewer--just five percent--favored reductions in bear populations by killing some.

The possibility of energy development in national parks, an unheard of suggestion in previous years, has received increasing consideration in this era of energy scarcity. Two-thirds of the national sample disapproved of such development in Yellowstone Park, if large oil discoveries were made, if this would be harmful to the park's wildlife. The final result in Table 56 further reflects the public's desire to protect wildlife in park areas, with over 70 percent opposed to increasing automobile access to scenic public areas if this adversely affected the wildlife there.

No response needed.

G. MISCELLANEOUS ISSUES

The final section of the paper covers a variety of miscellaneous issues, including wildlife rights of native Americans, water pollution and sport fishing, caging of animals in zoos, antibirdwatching sentiment, and a non-wildlife issue of general interest, the relation of environmentalists' goals to economic well-being.

The results of Table 57 concern the issue of special wildlife privileges granted by treaty to native Americans. A slight but significant majority of the public indicated opposition to Indians having a greater right to wildlife than other Americans despite past treaty guarantees. However, the responses were so divided that no clear position was apparent. Over 60 percent of respondents with both parents of native American ancestry favored superior wildlife rights for Indian Americans if granted by treaty.

Table 58 deals with the right of Eskimos to hunt the bowhead whale for its meat, despite the endangered status of this cetacean. The public was roughly divided on this issue, with a bare but significant majority opposed

The Fund for Animals

1765 P STREET N.W.
WASHINGTON D.C. 20036

LEWIS REGENSTEIN
Vice-President

30 January, 1982

Regional Director
Rocky Mountain Region
National Park Service
P.O. Box 25287
Denver, Colorado 80225

Dear Sir:

Thank you very much for providing us with a copy of your RDEIS on the grizzly bear management program for Yellowstone National Park; we appreciate the opportunity to comment on this important document on behalf of our nearly 200,000 members.

88 We are extremely concerned about the plight of the grizzly bear throughout the lower 48 states, and believe that it is especially important that everything possible be done to protect and preserve the remnant grizzly population of the Yellowstone ecosystem. Although it is listed as a "threatened" species, we feel that it should actually be considered endangered. It has been drastically reduced to a point of severe jeopardy, and is probably still declining towards eventual extinction.

89 Therefore, extreme caution should be taken in subjecting this population to the proposed management plan, the primary purpose of which should -- and legally must -- be to prevent its further decline, and to increase the number of resident bears. Bears should be removed from the Park only when absolutely necessary; the NPS' obligations to minimize mortality and disturbance of bears is accentuated by its earlier role in reducing and endangering this population through its management policies.

90 In finalizing your plans, we hope that you will give full consideration to the data that has been compiled by the Craigheads and by Stephen F. Stringham. We specifically urge that the final version of the EIS incorporate their research findings where appropriate to modify tactics for managing Yellowstone's grizzlies. We also endorse Mr. Stringham's call for a 60 day extension in the comment period as well as those of his recommendations designed to prevent and minimize harassment and removal of grizzlies from Yellowstone. We share his concern for the grizzly's precarious status, and believe that every effort should be made to protect this population and to avoid the killing or removal of grizzlies from Yellowstone.

For over a decade, we have had a special interest in the grizzly bear. It was legal action by our organization that resulted in the first EIS on NPS' grizzly removal program in the mid-1970's, and later in the grizzly being added to the federal protected lists as a "threatened" species. We maintain our strong interest in the welfare of the grizzly, which, I repeat, we consider to be endangered in the lower 48 states.

88 See response 65.

89 The proposed modified management plan, the Guidelines, and the Recovery Plan are all designed to prevent decline and ensure perpetuation of a viable grizzly bear population.

90 The plan and the EIS considers all appropriate data. Moreover, we believe the proposed modified plan would require fewer control actions. See page 47.

We would also like to express our gratitude to the many conservationists and scientists, including those in the National Park Service, now working to save the grizzly bear as a part of our nation's natural heritage. We hope that our comments and the enclosed material will be helpful to you in this regard.

Thank you for considering these comments.

Sincerely yours,

Lewis Regenstein
Vice President

encls: material on grizzly bears

cc: Stephen F. Stringham, University of Tennessee

RESPONSES

No response needed.

COMMENTS

The politics of extinction

THE SHOCKING STORY OF THE WORLD'S ENDANGERED WILDLIFE

Lewis Regenstein

MACMILLAN PUBLISHING CO., INC.
New York
COLLIER MACMILLAN PUBLISHERS
London

RESPONSES

No response needed.

COMMENTS

5
The grizzly bear: America's giant nears extinction

BEFORE the white man and his repeating rifles appeared in North America, the grizzly bear was unquestionably the dominant animal in the West. This proud giant feared nothing and ruled a vast domain from the Pacific Ocean to the Mississippi River.

But in recent years, hunting, trapping, and government "management" programs have wiped out most of these monarchs. And today, because of the policies of the U.S. government, the grizzly population of the lower forty-eight states is threatened with extinction. Having retreated into its final refuges, the grizzly's fate now depends on whether or not the government acts quickly enough to save these last survivors.

The grizzly bear (*Ursus arctos horribilis*) is the world's largest and most awesome predatory land animal—nearly 1,200 pounds of muscle, claws, and teeth, with gargantuan strength, lightning reflexes, and an insatiable appetite. When rising on its hind feet, a full-grown grizzly may stand eight to ten feet tall. To see one of these giants walk on its hind legs—which they often do—is an unforgettable sight. Moreover, the grizzly is capable of sprinting at over thirty miles per hour, and can kill a bull moose with one blow of its mighty paw.

To many early pioneer settlers and explorers, the grizzly symbolized the early West: proud, arrogant, unfearing, and untamed. It is estimated that about 1½ million grizzlies might have roamed the western United States at one time, with an additional 2½ million in western Canada and Alaska. The great bear was without doubt the dominant species of the continent.

The American Indians revered this "bear that walks like a man"; they felt that it was closely related to them because it often stood on its hind legs like a human. The few Indian braves who were able to kill a grizzly kept its claws as a symbol of their great hunting skill. Reportedly, they often ate the raw heart of the bear in the hope that this would impart to them its great courage and strength. According to naturalist George Goodwin, writing in the *Audubon Nature Encyclopedia*,

> Before the use of repeating rifles, the grizzly was lord over all it surveyed. It openly took what it wanted and none dared question its right. Both the Indian and the white settlers stepped aside as it marched triumphantly along the trail. With the introduction of modern firearms, the grizzly recognized defeat, and has taught its children to shun the highways of civilization and seek safety in flight when the hated scent of man flows down the breeze.

Biologist Victor Cahalane has written that grizzlies often pick up their prey and carry it bodily to the feeding area, even bull moose weighing up to 1,800 pounds. And W. J. Schoonmaker, in *The World of the Grizzly Bear*,[1] describes an incident in which a grizzly once killed six bulls in a single afternoon in a California bull ring. "The maddened bear," writes Schoonmaker, "standing on its hind legs, struck each of the other bulls dead with a single blow between the eyes." Another story tells of a cub which was captured and taken to a ranch in Colorado. A heavy collar and chain were attached to the cub before it was placed in a cage. The chain was then passed through the bars of the cage and attached to a large post. That night the cub's enraged mother visited the ranch, defeated a pack of dogs, demolished the cage, snapped the chain, and left with her cub.

[1] W. J. Schoonmaker, *The World of the Grizzly Bear* (Philadelphia, Pa.: J. B. Lippincott Company, 1968).

RESPONSES

No response needed.

COMMENTS

188 The politics of extinction

The grizzly is more than a ferocious, powerful giant—it is a highly intelligent animal as well. It ranks near the chimpanzee on intelligence tests, and on some tests scores above the gorilla and the wolf. However, the bear's extraordinary intelligence has gone largely unrecognized. One rancher, who transported a pet grizzly many miles away from his home and released it, learned of the bear's intelligence first hand. He returned to his ranch to find that the bear had beaten him home by eight hours.

Like other intelligent mammals, young grizzlies enjoy playing and frolicking with one another. In *The World of the Grizzly Bear*, Schoonmaker describes a family of grizzlies he once observed "roughhousing," with the seven-month-old cubs

> wrestling and playing like kittens or puppies. . . . Soon the mother bear and her offspring were joined by a dark-colored male that might have been the father of the cubs. He pushed one of the youngsters and rolled it over. At once, the two smaller bears rushed him, and the adult male and the cubs rolled about in a good-natured wrestling bout. The mother sat down, took her toes in her front paws, and rocked back and forth as she watched. Through my binoculars, I could see what was surely a smile on her face.

Female grizzlies are devoted mothers; it is even said that they adopt stray or orphaned cubs and raise them as their own.

In contrast to its intelligence, the grizzly's ferocity is well known, and has been grossly exaggerated. The grizzly has often been accused of being overly aggressive and prone to making unprovoked attacks on man. But outdoorsmen and scientists who have studied grizzlies are convinced that unprovoked attacks are rare or nonexistent. After a careful study of grizzlies, naturalist Ernest Thompson Seton concluded: "The grizzly, according to all the best authorities, never attacks man, except when provoked. That is, he is a harmless, peaceful giant, perfectly satisfied to let you alone if you let him alone."

Alas, the mighty grizzly, that once roamed openly by day, fearing nothing, now feeds guardedly at night, secretly and in cover. But Schoonmaker points out that the grizzly's peacefulness should not be construed as showing a lack of courage: "Education has taught him discretion. The biggest of our flesh-eating mammals has learned to shun man, but this is an act of wisdom, not of cowardice. It is his way, his only way, of surviving."

189 The grizzly bear

In sum, it can be said that the grizzly is a powerful creature that brooks no nonsense, but generally shuns man. When attacked or molested, it is quick to defend itself. Our ethic approves of this trait in ourselves, but condemns the grizzly as a ferocious killer for doing the same.

It is true that a few unprovoked grizzly attacks on man seem to have occurred; but there is no way of actually knowing what motivated the bear in question to strike out. For example, a hiker may be set upon by an angry grizzly, not realizing that the bear is protecting her cubs which are hidden out of sight. If given sufficient warning, grizzlies will normally leave an area when humans approach. But bears in national parks, which are hand-fed by humans and are not subjected to hunting, can lose their normal fear of man and become dangerous. A bear may also attack a man as a result of past experiences with other men —for example, if it has been wounded by a hunter during a previous encounter. The past decades of trophy hunting make the idea of unprovoked attack on man virtually meaningless.

Like other bears, grizzlies den up during the winter, either alone or in family groups such as a mother with cubs, or young grizzlies together that are brothers or sisters. Sleeping grizzlies do not eat all winter but survive on their body fat. Their dens are quite large, and can be six feet high and eight feet wide, with a "bed" composed of grass, leaves, and evergreen boughs.

An amazing instinct or intelligence tells the grizzly exactly when to begin its winter sleep. During the period in which grizzly experts Drs. Frank and John Craighead were studying the grizzlies in Yellowstone National Park, the bears would den up for the winter at the same precise time, but on a different calendar day each year. It is thought that perhaps the grizzlies wait for a drifting snowstorm to cover their tracks, so they will not be followed to their winter quarters.

Despite its relatively harmless nature, few if any animals, except for the wolf, have been subjected to as cruel and intense persecution as the grizzly. Fully sixteen different species and subspecies of grizzly (in the traditional classification) have

RESPONSES

No response needed.

COMMENTS

been slaughtered into extinction. The Mendocina and Henshaw's grizzly were extirpated in the late 1800s, and the California Coast and Klamath races were gone by the early 1900s, as were the Tejon and Southern California grizzlies. At least nine other subspecies of grizzly have also joined the ever-growing list of extinct animals.

According to Schoonmaker, the grizzly population of California numbered about 10,000 in the 1830s. The grizzly was so numerous that 50 or 60 bears could be seen in a twenty-four-hour period, and hunters often killed five or six a day. One hunter killed about 200 grizzlies in Obispo County prior to 1840, and another hunter shot about 200 in Tejon Pass just that year alone. In 1848, a group of five professional hunters killed some 700 grizzlies in the state. As a result of this unrestricted slaughter, no grizzlies have been seen in California since 1922, although about twenty years later, the California grizzly was made the state's national emblem. The last grizzly seen in Oregon was in 1894, and in Texas, the last sighting was in 1890.

As a result of this remorseless persecution, the grizzly—a symbol of wild America—has all but been extirpated in the western part of the United States. Moreover, the situation in Alaska and western Canada is not encouraging. The barren ground grizzly bear (*Ursus arctos richardsoni*) is particularly endangered. Found along rivers in the Canadian Arctic tundra, only 500–1,000 are left. It is protected by law, but continued illegal killing prevents any chance of its recovery. In Alaska, the grizzly (which includes the coastal or island race that is called the Alaskan brown bear or Kodiak bear, *Ursus arctos middendorffi*) is subjected to heavy hunting pressure, of the type that has already eliminated the grizzly from most of the lower forty-eight states. In 1966, hunters killed 856 grizzlies in Alaska; and in the preceding years, the average kill was 554 bears. But this annual "harvest" is increasing, and in 1972, 828 grizzlies were legally killed in Alaska.

In Mexico, the grizzly appears to be already gone. The Mexican grizzly (*Ursus horribilis nelsoni*) was thought to be extinct in 1962, having been finished off by hunters and ranchers. But five years later, a remnant population of 30 to 40 bears was discovered in the Sierra del Nido area of central Chihuahua.

However, in a few years this tiny group was exterminated by poisons supplied by the U.S. Department of the Interior in a "hands across the border" cooperative program with the Mexican government. In 1969, another group of grizzlies was found in the Sierra Madre, but the present status of these last survivors is uncertain, and most authorities feel that the Mexican grizzly is extinct.

It was the invention of high-powered rifles that marked the beginning of the end for these bears in the western United States. The stockmen considered the big bear a threat to their sheep and cattle, and waged relentless war against the grizzly. Cash bounties were offered to all hunters for the killing of grizzlies. Poison and steel traps, which often maimed or crippled grizzlies, were later added as a means of further reducing the bear's population. Faced by an onslaught of this magnitude, the grizzly was eliminated from one area after another. From 1937 to the present, the U.S. Department of the Interior claims credit for poisoning, trapping, or shooting about 25,000 bears, a significant percentage of which were surely grizzlies. (No one knows how many were poisoned, wandered off to die in remote areas, and were never found.) This carnage was carried out as part of the Interior Department's "predator control" program, which continues to this day. It is designed to eliminate predatory animals from western lands, public and private, to free them for western livestock raisers to graze their sheep and cattle.

In its March 1973 publication, *Threatened Wildlife of the United States*, the Interior Department estimates that there are only 700–1,000 grizzlies left in the entire United States south of Canada; about 10 each in Idaho and Washington; "a few" in Colorado (where it may already be extinct); 300 in Wyoming; and 375–700 in Montana. Thus, in little more than a hundred years, the white man has reduced the grizzly's population from about 1.5 million to probably less than 800—a reduction factor of over 99 percent! Perhaps it is man, rather than the grizzly, that should be known by the Latin name *horribilus*.

Of the 800 or so grizzlies which remain in the western United States, most are found in a narrow corridor stretching from Glacier National Park south to Yellowstone and Grand

RESPONSES

No response needed.

COMMENTS

Teton National Parks. A large number of bears was, until recently, found around Glacier National Park and the so-called Bob Marshall Wilderness Area in northwestern Montana. However, the Bob Marshall area has been heavily hunted, and no one knows how many grizzlies remain in this region. If it still contains grizzlies, one reason may be that part of it might be replenished by an inflow of bears coming down from Glacier National Park (where hunting is forbidden) and Canada. (Other grizzly stocks in Bob Marshall are isolated and therefore more vulnerable.) What is clear is that the virtually unlimited hunting permitted by the state of Montana has prevented the grizzlies from reestablishing themselves in many areas of this ecosystem from which they have been eliminated or seriously reduced in number.

Another problem is the increased road building and timber cutting, especially clear-cutting (cutting all the trees in an area instead of selected ones), by the Forest Service through national forests and along the boundaries of wilderness areas. This has been carried out at an accelerated rate by the Nixon administration (under pressure from the timber industry) under the orders of Agriculture Secretary Earl Butz and Forest Service Chief John McGuire. These activities are destroying much of the grizzly's remaining habitat, and are opening up formerly inaccessible areas to legal hunters and poachers. (In fact, illegal hunting of grizzlies may account for a greater number of bears than legal hunting.)

One scientist who has observed the disappearance of the grizzly firsthand is wildlife biologist Doug Chadwick. He and his wife spent three years in a wilderness area called Bunker Creek in northwest Montana. They studied the effects of road-building, logging, and hunting on the ecology of mountain goats. When they first arrived there were six to eight grizzlies using the wilderness valley and the adjacent area as part of their range. Later, despite the opposition of local conservationists, the U.S. Forest Service helped build a road into the area. By 1973, the Chadwicks and their field assistants were able to find only one resident bear, a young female. In the fall of 1973, she was shot by a hunter. This same situation seems to be repeating itself throughout other areas as more of the grizzly's remaining range becomes accessible, although precise figures are impossible to come by.

Chadwick points out that "harvest" figures, the only figures available in Montana for estimating grizzly numbers, can be very misleading:

> Harvest statistics can remain high for the region for many years as more hunters and new roads expose individual populations in new areas. So while region-wide kill figures remain high, individual groups can be severely depleted or eliminated. . . . By the time hunting efforts yield diminishing returns and harvest success drops, the bear population may have passed the point of recovery.

Another large concentration of grizzly bears is found in the Yellowstone ecosystem. Though ostensibly protected in Yellowstone, the grizzly population there is seriously threatened by a dispersal and removal program that has been carried out by the Interior Department's National Park Service. And outside the confines of the park in neighboring Wyoming and Montana, the big bruins of Yellowstone are eagerly sought by trophy hunters.

In fact, the virtually unrestricted trophy hunting of grizzlies in the national forests of Montana, and to a lesser extent of Wyoming, is the single greatest threat to the survival of these animals. Over the last few years, Montana has issued more grizzly hunting permits each season (at a cost of only $5) than there are grizzlies in the entire lower forty-eight states. In 1969, for example, 1,638 grizzly hunting licenses were sold; in 1970, 1,980 licenses were issued; in 1971, 965; in 1972, 934; in 1973, 810; and in 1974, 919.

Although Montana claims that only about 10 to 60 grizzlies are actually taken each year (with a twenty-year average of 37 per year), the state's Fish and Game Department has no way of knowing the real figure. The official estimate is derived from the number of hunters who report killing a grizzly within ten days and pay an additional $25 fee. Human nature being what it is, it is impossible to estimate how many hunters actually turn in their kill and pay the extra fee. In fact, the illegal and unreported bear kill could exceed the known take several times over. It is known, however, that of the number of bears re-

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ported killed in Montana in 1967–72, an average of 20 percent came from the Yellowstone ecosystem.

In late 1973, Interior Department officials assured me that they planned to halt this hunting of grizzly bears as soon as they were given the authority to do so under the new endangered species legislation then pending in Congress. Yet shortly thereafter, Assistant Secretary of the Interior Nathaniel P. Reed, who has the responsibility for protecting vanishing species, defended this unrestrained hunting as a conservation measure. In a September 12, 1973, letter published in *The Washington Post*, in "rebuttal" to an earlier article on the grizzly I had written for the editorial page, Reed flatly stated that "legal hunting seasons have been regulated by the states which still have grizzly bears to insure a continuation of this species."

Curiously, the Interior Department placed the grizzly bear on its first endangered species list in 1967, but two years later inexplicably removed it, possibly in response to pressure from the hunting lobby or so that the grizzly extermination plan could be carried out in Yellowstone without a public outcry.

The controversial situation in Yellowstone National Park requires special attention, since this is the last major refuge for the grizzly in the western states. In recent years, the government has virtually destroyed this population while claiming to be carrying out a "management plan" for the bears' own good.

The problem in Yellowstone stems from the fact that many grizzlies in and outside the park have regularly congregated at open-pit garbage dumps during the summer months for almost a century. These animals have become accustomed to eating human garbage and are in fact dependent upon it, as would be expected, since they have been frequenting disposal areas for over eighty years. Several years ago, National Park Service (NPS) authorities announced that they planned to return the Yellowstone grizzly population to a "natural, wild state" by removing garbage from their diet.

At the request of the Park Service, Drs. Frank and John Craighead, two widely respected biologists, were asked to prepare a management plan for Yellowstone's grizzlies. The Craigheads began their research on grizzlies in 1959, and since then have captured, examined, and released over 550 bears. Additionally, they have immobilized and color-marked over 250

grizzlies and put in over 40,000 hours carefully studying their activities and behavior. This work, together with the tracking of 24 additional radio-tagged animals for about 30,000 hours in order to study home ranges and social and denning behavior, has undoubtedly made the Craigheads the preeminent grizzly bear biologists in the United States. They are acknowledged to be the world's top grizzly experts, and have been the subjects of two hour-long "National Geographic" television specials.

The Craigheads submitted a report to the Park Service in which they recommended that the grizzly population be returned to a natural state by gradually closing the open-pit garbage dumps over an eight- to ten-year period, and slowly weaning the bears off the garbage. The Craigheads emphasized that under no circumstances should the dumps be rapidly phased out, since such a precipitous action would have disastrous consequences.

Incredibly, the Park Service chose essentially to disregard the Craighead report and did just the opposite of what it recommended. A "management" program was established based on hypotheses supported by little or no valid data. As a result, the Craigheads' dire predictions have been largely borne out. Instead of a gradual phase-out, the Park Service chose to follow the reckless course and close the dumps in rapid succession.

A possible reason for the Park Service's decision might have been the fact that in 1967, a grizzly killed two female campers in Glacier National Park. In a panic, the Park Service appears to have decided largely to eliminate the Yellowstone grizzlies under the guise of a "management plan." The fact that the grizzly was inexplicably removed from the endangered species list about the same time the program was begun is further evidence that the government knew very well it would involve the wholesale slaughter of these animals.

Moreover, the Interior Department's grizzly extermination program in Yellowstone seems to be part of a general program to remove bears from the national park system of the West. Since 1960, for example, between 200 and 300 black bears have been killed by Park Service rangers in Yosemite National Park in California. Other bears have been terrorized while being removed from the park, increasing the possibility of hostility to humans, and therefore also the likelihood of "un-

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provoked" attacks. Writing on *The New York Times* op-ed page, wilderness writer Galen Rowell described a typical incident that took place in early 1974:

> A cub was shot out a tree with a tranquilizer gun and accidentally killed while its mother and brother watched. They were captured and towed in a trap behind a truck that carried the cub's body to a naturalist for skinning. The blinking emergency light lit up the trap at intervals. The two bears were nearly berserk. They were released 40 miles away in the back country. The cub's body rots openly below the highway. Its skin will grace an Indian exhibit next spring. Will its mother and brother be more aggressive toward humans in the future?

"Human violence toward bears," concludes Rowell, "will eventually provoke the same response in them."

Whatever the reason for implementing the Yellowstone grizzly management program, it has been in effect for six years, and is an unqualified disaster. The program not only disoriented the bears and forced many to leave the park, it also threatened them with starvation. Instead of obediently returning to the back country and feeding on wild foods, grizzlies suddenly deprived of garbage not only continued to seek food in areas they had long frequented, but also began to invade campgrounds in increasing numbers. Instead of lessening the chance of bear-man encounters, the Park Service program increased it by disrupting the bears' life cycle and starving them. In June 1972, Yellowstone witnessed its first grizzly-caused fatality since 1916 when a young camper, Harry Walker, was attacked and killed by a grizzly near Old Faithful. (Reports that the bear partially consumed the camper—behavior which is virtually unheard of in grizzlies—is strong evidence, if true, that the bear was starving.) Moreover, the grizzly bear death rate became more than twice the birth rate, with 91 bears shot or otherwise killed in 1970–71, a figure almost equal to the present Yellowstone population as estimated by the Craigheads. An additional 27 bears perished in 1972.

The Park Service's management plan utilized some particularly brutal and unscientific methods to accomplish its objective. A policy was adopted to kill or ship to zoos all bears that entered campgrounds or developed areas twice within a two-

year period. Since bears have a strong homing instinct, removing them from their normal range had little permanent effect, except for those that were killed during this process. In 1971, one young female bear being relocated by Montana state game agents sustained severe injuries to her legs when dropped out of a Park Service helicopter. After crawling a distance of 70 miles in forty-eight days, dragging one or both of her crippled, paralyzed legs, she was caught near her home in a trap set by the Montana officials and killed. According to the official Montana report, of 17 bears relocated in a three month period by state agents, at least 13 are known to have been killed. Thus, many—probably a majority—of bears officially listed as "removed" or transplanted from the Park have actually been killed.

And even "successful" relocations of grizzlies can be disastrous for the bears. This is because the home range of a grizzly, which can be shared by several bears, may be crucial to its survival. It is in the home area that the grizzly can find security: it knows where to find food to eat, shelter for the summer, and safe denning spots for the winter. It knows which areas are safe and which it should avoid. But by helicoptering bears outside of their ranges, the Park Service destroys the intricate structure in which bears have learned to survive, avoid humans, and get along with other resident bears. Transported bears find themselves in a world they do not understand, filled with dangers to which they have never been exposed, such as hunters, traps, and livestock ranches. Humans, who never before bothered them, now hunt and shoot them incessantly. It is no wonder that, faced with such strange perils, the bewildered grizzlies try desperately to return to their homes.

In an effort to convince the Park Service that its program had failed utterly and that a drastic change in management practices was indicated if the grizzlies were not to be totally wiped out, Dr. John Craighead presented his findings at a meeting of Interior Department and Park Service officials held on September 19, 1972 in Yellowstone. Dr. Craighead's data showed that unless the current management program were terminated, the grizzly bear within the Yellowstone ecosystem could be expected to become extinct by 1998 or sooner. According to Dr. Craighead, "The present National Park management program, if

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continued, will very probably exterminate, or nearly exterminate, the Yellowstone population in about 20–25 years. If remedial action were taken at once, it would still be questionable whether this population can recover. The grizzly bear population in the Yellowstone ecosystem has already reached a critical level. This population is in very serious trouble."

A possible solution to the problem might be not to reopen the dumps but rather to provide the hungry grizzlies with garbage or elk carcasses which could be dumped at increasing distances from developed areas and campgrounds in decreasing amounts. This would help lure the bears away from areas of human activity and could provide the necessary supplemental food for the period of transition. But the Interior Department has shown little interest in taking any action that might amount to an admission that something was wrong with its management program.

By 1973, the grizzly bear "management" plan had come under increasing fire from conservationists. In January 1973, Assistant Interior Secretary Nathaniel Reed was quoted in news articles as saying that "we realize the death curve is exceeding the birth rate in the park. We had anticipated that when we shut down the garbage dumps. But we expect it to level off. We have more time than the Craigheads say." In explaining why the National Park Service (NPS) rejected the gradual process suggested by the Craigheads to wean the bears off garbage with a minimum loss of bears, Reed stated that "we decided that cold turkey was better."

Interior and NPS also claimed that their "data" was better and more up-to-date than the Craigheads' findings, but refused to explain the methodology they were using to collect the data. Knowledgeable scientists pointed out that since the Park Service was not marking bears in any way—as the Craigheads had carefully done—the government biologists had no way of distinguishing between different bears. Apparently, this was leading to duplicate sightings of the same bears, and thus exaggerated estimates of the number of bears remaining in the park. Moreover, in a court deposition, Yellowstone grizzly biologist Glen Cole admitted under oath that there were large areas of Yellowstone he had never visited or done fieldwork in. And a former employee of the Park Service stationed in Yellowstone

during the time the program began to be carried out has charged that the Park Service intentionally fabricated statistics and falsified records in order to conceal the actual impact of the program. Other Interior Department scientists who have privately taken issue with the management program have been removed from their posts and transferred out of the Park.

In fact, the Interior Department's policy on scientific research is that conclusions of such studies must be tailored to conform with the existing views of the agencies involved. On October 13, 1969, the Park Service's Chief Scientist, Robert M. Linn, wrote to Dr. John Craighead and ordered him to make sure that the results of his grizzly bear study would be consistent with the government's policy position. This letter clearly stated that

> management recommendations must reflect the policies that have been established in regard to whatever it is that's being managed. . . . Recommendations that are offered to an agency should fall within the parameters set by policies, because if they do not fall within such parameters, the administrators of the organization will find it difficult or impossible to accept the recommendations. Management recommendations . . . must be consistent with policies within which the National Park Service is contrained to operate. (Recommendations outside of policy confines would constitute policy rather than management recommendations.)

The Park Service memo also attempted to censor the Craigheads and prevent them from publishing findings that conflicted with its policy:

> Reactions by the National Park Service to recommendations should be obtained prior to publication for the benefit of all parties involved.

When reading this memo, Professor William Rodgers, a lawyer involved in trying to save the grizzly, remarked that such a letter "would be an insult if handed down by a Commissar in the Soviet Union."

As the government's position deteriorated, its responses became more ludicrous and less credible. On September 20, 1973, I wrote to Secretary Reed asking for an explanation of

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his letter to *The Washington Post* describing Montana's unlimited hunting of grizzlies as "regulated. . . to insure a continuation of this species." On November 6, Reed wrote back, ignoring my question on the hunting issue, and simply made a general defense of the management program. But several of his points seemed to be at variance with the facts. For example, Reed stated that he had "initiated a new research program in the Yellowstone ecosystem last spring. This is a cooperative effort. . . . Adjacent state wildlife agencies have been invited to participate in this program and are working with the research team." This statement was particularly baffling, since a biologist with the Wyoming Game and Fish Department, Dr. Larry Roop, had told me weeks earlier that the Park Service had refused to cooperate with his study team and would not even grant them permission to enter the park or fly over it for study purposes. The obvious implication was that the Park Service had something to hide. This fact was included in an October press release on the grizzlies that the Fund for Animals had sent to Reed and others, and it was never challenged or refuted, nor was the situation clarified. But Interior continued to state publicly that it was cooperating with state study teams.

Reed's letter also stated that Yellowstone's garbage dumps "were condemned by the Public Health Service and ordered closed by Executive Order." This was the first time the Interior Department had claimed the dumps were closed for reasons other than "good management," and I could hardly believe my eyes. Would the department now try to shift the blame for the near extinction of the grizzlies to—of all people—the Public Health Service? After we made some phone calls to the department and NPS, asking for copies of the Health Service order and further information on it (which was never sent), we did not hear that particular argument used again.

The Interior Department switched to the line that it was awaiting the results of a study being done by a group of biologists appointed by the National Academy of Sciences (NAS) to assess the situation. The cost of the study, including the salaries of the scientists, was being paid by the department through NAS. However, it is questionable whether this study will have any relevance in determining the status of the grizzly. In the few months that were spent studying the situation, it

would be impossible for this panel—none of whom is considered an expert or authority on the Yellowstone grizzlies—to duplicate or even begin to approach the volume of data gathered by the Craighead brothers in their thirteen years of research.

Steve Searter, staff biologist for the Fund for Animals, wrote to the NAS asking how the members of the study group were picked, but Russell B. Stevens, Executive Secretary of the NAS' National Research Council, wrote back, refusing to provide the information. One member of the study group, Dr. Douglas Chapman, seems to be a particularly curious choice. Chapman is a fisheries biologist at the University of Washington at Seattle, who testified before Congress in July 1971 against a moratorium on whale killing, stating that such an action "can hardly be said to be a rational act." He also stated that he had opposed the Interior Department's earlier action in placing the great whales of the United States' endangered species list. In light of his past record, the question has been raised as to Chapman's ability to bring to bear on the grizzly situation the combination of objectivity and expertise that is needed for a proper scrutiny of the problem.

When the NAS report was finally issued in July 1974, it did attempt, as expected, to adopt a middle position and not take sides. Nevertheless, it pointed out that the NPS had no valid population data of its own, and that the Craigheads' grizzly studies were the best source of information available. The report also recommended that "man-caused removals" of grizzlies from Yellowstone should be held to 10 (which may be at least the number killed by poachers) beginning in 1974.

In the meantime, instead of trying to correct its mistakes and make the necessary changes, the Interior Department launched a counteroffensive against its critics. In reality it was probably too much to expect it to concede its errors, since this would have entailed admitting that half of the Yellowstone grizzlies had been exterminated and that, as a result, the population was threatened with extinction. Nor could the Park Service bring itself to admit that its policies might have brought about the death of at least one, and possibly two, campers at Yellowstone. Faced with this dilemma, the government launched a cover-up of the scandal.

Interior Department and Park Service officials became in-

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creasingly sensitive to criticism, and began conducting a campaign against the Craighead brothers intended to discredit not only their findings but their ability and objectivity as scientists. The Craigheads were barred from meetings on the grizzly problem; and their expensive research laboratory at Yellowstone, which they had spent so many hours constructing and furnishing, was destroyed by bulldozing. It was distressing to see these modest, soft-spoken men made the target of such a vicious smear campaign simply because they refused to be muzzled by the Park Service bureaucracy.

But the government's obstinacy only made conservationists more determined to expose this scandal and save the grizzly. In July of 1973, Steve Seater, who was then with Defenders of Wildlife, a widely respected conservation group in Washington, D.C., wrote and had published two articles critical of the Interior Department's policies. As wildlife editor of the magazine (*Environmental Quality*) that published his piece, I sent a copy of it to Assistant Interior Secretary Nathaniel Reed and asked for comments on Seater's charge that Reed's policies were threatening the Yellowstone grizzlies with extinction. On August 14, Reed wrote back, failing to specifically challenge or refute a single fact in the article. Reed did state, however, that "the article is unusually biased and information was obviously developed from a single source without, to the best of our knowledge, any attempt to contact the officials of Yellowstone National Park, the National Park Service, or the Department of the Interior. . . . We would like to express our surprise and regret that Mr. Seater's purported facts were not more thoroughly checked before printing."

But Reed's charge that Seater had failed to contact Interior Department officials—impugning Seater's objectivity and credibility—was completely false. In fact, in April of that year, Seater had written to Interior Secretary Rogers C. B. Morton expressing his concern about the plight of the Yellowstone grizzlies. On June 1, he received a detailed seven-page letter in reply, signed by none other than Nathaniel Reed, with seventeen separate documents enclosed outlining the "success of the management plan." But Seater never received an apology or retraction from Reed for his false accusation, and conservationists soon came to realize that this type of response could be

expected from the Interior Department if their policies were criticized.[2]

But despite the Interior Department's efforts, the pressure continued to grow to terminate or modify the grizzly extermination program. In late July 1973, the House Subcommittee on Fisheries and Wildlife Conservation, chaired by Congressman John D. Dingell (D-Michigan), issued a report on the hearings it had been holding on endangered species. This report stated that "The rapidly dwindling stock of grizzly bears within Yellowstone Park . . . may be endangered, and are undeniably threatened, and should at least be protected by supplying them with carcasses from excess elk within the Park, by curtailing the destruction of habitat by clear-cutting National Forests surrounding the Park, and by preventing hunting until their numbers have recovered sufficiently to withstand these pressures."

By now, the Interior Department had decided to retaliate strongly against its critics. Its main target was Steve Seater, who was busy stirring up senators and congressmen in an attempt to get a congressional investigation of the situation. According to Seater, Reed began to put pressure on Defenders of Wildlife (DOW) to muzzle him and call off his campaign to save the grizzly. Reed contacted one and probably two members of Defenders' board of directors. A hard-hitting wildlife organization, DOW had, over the years, compiled a long record of fighting the Interior Department, particularly its predator poisoning program. But at this particular time, DOW was especially vulnerable to such pressure; it was engaged in negotiations with the department's Bureau of Land Management (BLM) over the government's intention to condemn an access road through DOW's Aravaipa wildlife refuge in Arizona, which would make the preserve more accessible to hunters. The result of Reed's actions was that Seater was fired. Fortunately,

[2] I also sent a letter to National Park Service Director Ronald Walker—a former Nixon advance man—and Forest Service Chief McGuire, asking for their comments on Seater's article. I never received any reply from Walker; but McGuire wrote back that his agency was "participating in a joint grizzly bear study" with the Interior Department and NPS. He also stated that the hunting season in the national forests would not be closed since "the states do not feel that the number of bears taken in the National Forests under these regulations is any threat to the continued existence of viable, healthy populations of grizzly bears."

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Seater was quickly hired by the Fund for Animals to continue his campaign from the Fund's Washington office.

Instead of improving, the department's attitude toward public opposition to its policy became progressively worse. Around August 1973, the Craighead brothers submitted to the Interior Department a computer report summarizing their thirteen years of research in Yellowstone. The report was devastating, and warned that only about 102 grizzlies remained in the entire Yellowstone ecosystem, down from a peak of an estimated 202 in 1966. (Other estimates place the peak population at 250 grizzlies.) Despite repeated requests for a copy of the report, the Interior Department refused to release it or reveal its contents, despite attempts by congressmen and conservationists to obtain the information. It was clear that the department was determined to suppress and conceal from the public this report, prepared by its own consultants.

Shortly thereafter, two of syndicated columnist Jack Anderson's investigative reporters, Les Whitten and Steve Solomon, obtained a copy of the "secret" Craighead report that was being held as tightly under wraps as President Nixon's Watergate tapes. In the October 31, 1973, column, Anderson discussed the report that the Interior Department was hushing up, and quoted it as warning that "the grizzly bear population in Yellowstone Park has declined rapidly and will continue to do so if conditions remain unaltered." The story was now out, and the department had no choice but to begin releasing the report to interested parties.

By this time, it had become apparent that the government would not be budged by reason, rationality, or persuasion, and that legal action might be the only hope for saving the grizzly. By a happy coincidence, about this same time William H. Rodgers, Jr., a professor of law at Georgetown University Law Center in Washington, and his assistant David L. Thomas, Jr., became interested in the situation. Rodgers, author of *Corporate Country: A State Shaped to Suit Technology*, had wide experience in public interest lawsuits, such as banning DDT; and he is an old hand at dealing with obstinate government bureaucracies. His assistant, Dave Thomas, was equally committed to forcing government compliance with the law.

A quick examination of the situation by Rodgers and

Thomas convinced them that the government was in violation of the law in carrying out its grizzly "management" program, since an Environmental Impact Statement (EIS), required by the National Environmental Policy Act of 1969, had never been issued. Although the Interior Department claims to have "prepared" one around June 1972, it was never released. Conservationists suspected that the reason for this was that the statement, if accurately drafted, would reflect the dire predictions made by the Craigheads, the only scientists who had any valid data on the problem.

Working on a voluntary, no-fee basis, Rodgers and Thomas launched legal actions on several fronts. On December 18, 1973, they filed a lawsuit on behalf of the Fund for Animals, Steve Seater, and myself, against the government to compel the publication of the EIS required by the law, and which should have been issued in 1970 when the program began to be carried out. Named as defendants in the case were Secretary of the Interior Rogers C. B. Morton, National Park Service Director Ronald Walker, and Superintendent of Yellowstone Park Jack Anderson (no relation to the columnist). The lawsuit specifically asked that the government be required to address itself to such questions as whether the grizzly population of Yellowstone was threatened with extinction, and whether starving the bears by closing down the dumps might have been what caused the death of a camper in 1972.

Three weeks later, on January 18, 1974, Rodgers and Thomas formally petitioned Forest Service Chief John McGuire to halt the hunting of grizzlies in the national forests surrounding Yellowstone and which are part of the Yellowstone ecosystem, before the opening of the next hunting season. The groups joining in the petition included the Fund for Animals, Environmental Action, the Animal Protection Institute, and Friends of the Earth. And three weeks after that, on February 14, the Fund legally petitioned the Interior Department to immediately move to add the grizzly to its list of endangered species and simultaneously ban the hunting, trapping, or killing of grizzlies under the Endangered Species Act of 1973's emergency provisions. At last, the government was forced to take action one way or the other. The Fund's lawsuit was amicably resolved. The government agreed to draw up an

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environmental impact statement for its Yellowstone "management" program, and the Fund agreed to drop its suit. Our only regret was that it took legal action to bring about this sudden partial agreement on principle. What would have been interesting would have been the result of a suit based on a law passed on May 7, 1894, which states

> 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 said park [Yellowstone].

But as happy as we were to accomplish the objectives of our lawsuit, we were under no illusions that a piece of paper would bring back the grizzly population that had been decimated in Yellowstone. Meanwhile, the government was still resisting our petitions and refusing to take any substantive actions that would ban the hunting of grizzlies and provide them with adequate protection. On February 1, 1974, we received a letter from Forest Service Chief John McGuire turning down our request to halt grizzly hunting in the national forests. A few weeks later, McGuire wrote to Senator Alan Cranston (D-California), rejecting his request that this hunting be terminated. And on March 7, the Interior Department responded to our request to place the grizzly on the endangered list with a letter from Deputy Assistant Secretary Curtis Bohlen stating that our petition would be "presented to a panel of scientists" (not further identified) and that a decision would be made "in the near future" as to whether "there has been substantial evidence presented to warrant a review" of the situation. An obvious stalling tactic.

A few weeks later, the Interior Department announced that enough "substantial evidence has been presented to warrant a review of the status of the grizzly bear to determine whether it should be proposed for listing as either an endangered or threatened species." But Interior turned down the Fund's request that the department immediately move to list the grizzly as endangered; and that a hunting ban be proposed. The result of Interior's study was a finding that "the grizzly bear is

'threatened' in the United States south of Canada." This document, compiled by Dr. John Paradiso and Dr. Ron Nowak, of the Office of Endangered Species, recommended that a general ban on sport hunting of grizzlies throughout the West be considered, and instituted immediately in the Yellowstone ecosystem. Nevertheless, Interior and the Forest Service let the 1974 hunting season in Wyoming and Montana proceed as usual, with Montana issuing about 919 grizzly permits. (Montana did kindly close off several areas of Yellowstone to grizzly hunting, but part of the ecosystem was left open, as were all of the other hunting areas.)

In late 1974, William F. Sheehan, another Washington attorney representing the Fund, put Interior on notice that he planned to bring legal action if the grizzlies were not soon listed. As a result, on January 2, 1975, Interior finally took action to increase the protection for grizzlies in two of their three major ecosystems. But the largest population stock—that found in northern Montana—was sold out to the trophy hunting lobby.

On January 2, Interior announced a proposal to add the grizzly bear population of the lower forty-eight states to its list of "threatened" species, after a period for public comment. This made the grizzly the first native animal to be proposed for this new category, which was created a year before by the Endangered Species Act of 1973. (A "threatened" species is one "likely to become an endangered species within the foreseeable future.") Although most conservationists and authorities on the grizzly believe the bear to be, in fact, "endangered," Interior preferred to place the animal in the less protective "threatened" classification in order to allow large-scale trophy hunting of the grizzly to continue.

The regulations proposed by Interior would prohibit sport hunting of grizzlies in the Yellowstone and Selway-Bitterroot ecosystems. But continued large-scale hunting of grizzlies would be permitted in northern Montana's Bob Marshall ecosystem, with the season supposedly closing after 25 bears had been killed there from all causes. This is being allowed despite the fact that hunters, with the formerly unlimited-quota open season, were only able to find and kill a reported 14 grizzlies in 1972

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and 15 in 1973 in all of Montana (in addition to those killed and not reported). Thus, the annual quota of 25 bears agreed upon by Interior and Montana for this ecosystem (which is only 4 less than the average annual loss since 1967 from all causes), represents a figure almost double the reported hunter kill for recent years statewide, including part of Yellowstone. Because of large-scale poaching, this quota is a virtually meaningless figure that allows Interior and Montana to justify the annual sale of hundreds of grizzly hunting permits until northern Montana's grizzlies are annihilated. In addition, Interior's proposed rules would allow ranchers to kill grizzlies to protect livestock throughout most of the bears' range.

Steve Seater once described the grizzly as "the largest and most powerful carnivore that walks the earth. It is part of our wildlife heritage, the embodiment of wilderness, and a reminder of what early America must have been like." These ancient beasts were once contemporaries of the mastodon and the sabre-toothed tiger. Yet the last few years have seen our government condemn the only significant population of grizzlies remaining in the West to virtual extinction. In some areas where grizzlies were common just a few years ago, they are now locally extinct, and will never again be part of the local ecology. This monarch, which has, since the ice age, been lord over a vast domain from the Pacific Ocean to the Mississippi River, has now been forced to retreat to a few shrinking sanctuaries.

As far back as 1913, naturalist William Hornaday warned that the grizzly was becoming endangered, and pointed out that Yellowstone Park was then the only area where the bear was protected. But in recent years, even Yellowstone has been destroyed as a re uge for the grizzly. It is now clear that the entire species is threatened within the lower forty-eight states; and the most spectacular animal in North America may soon disappear from the West.

The grizzly can retreat no further. It is now at our mercy. But if the federal government, and the states of Wyoming and Montana, can be persuaded or forced to provide adequate protection to these remnant surviving stocks, perhaps they can be saved and passed on to future generations. Otherwise, this proud and awesome giant is surely doomed.

The University of Tennessee
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FEB 1 1 1982

February 8, 1982

Glen T. Bean, Director
Rocky Mountain Region
National Park Service
655 Parfet Street
P. O. Box 25287
Denver, CO 80225

Dear Mr. Bean:

I have studied with interest the draft and revised draft EIS for grizzly bears in Yellowstone National Park and adjacent areas. Among the many ideas and recommendations regarding future actions, it is obvious that the assessment of density and development of a density index is of paramount importance and critically lacking. The same two subjects have been a primary thrust of our work on black bears here in Great Smoky Mountains National Park since 1970. After 12 years of research, we have derived relatively accurate population estimates and reliable population indices. I feel we are presently in a position to offer substantive comments, suggestions, directions, and guidance regarding these same topics for grizzly bears. In reference to the conservation of endangered-threatened animals, the use of a more common and related surrogate species for establishing and refining various techniques has been recognized for some time as a legitimate and worthwhile endeavor. Because of our involvement with such a species on topics that are very timely, I feel we could contribute toward development of more refined management strategies on grizzlies. My Research Associate, Ken Johnson, and I would welcome the opportunity to meet with whomever might be interested to discuss our findings and their potential applicability to grizzly bears.

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Thank you.

Sincerely,

Michael R. Pelton
Professor

cc: Chief Scientist, Rocky Mountain Region, National Park Service
Dr. Charles Jonkel, Chairman, Border Grizzly Technical Committee
Dr. Richard Knight, Chairman, Yellowstone Interagency Grizzly Bear Study Team
Robert M. Baker, Regional Director, SE Region, National Park Service
Dr. Jay Gogue, Chief Scientist, SE Region, National Park Service
Mr. Dave Beal, Superintendent, Great Smoky Mountains National Park
Ken Johnson, Research Associate, University of Tennessee

THE UNIVERSITY OF TENNESSEE IS AN EQUAL OPPORTUNITY EMPLOYER

91 The section on bear population size and density has been revised to include the most current data. See page 28. The Recovery Plan also includes analysis of data on density.

Stephen F. Stringham
Graduate Program in Ecology

24 January 1982

Regional Director
Rocky Mountain Region
National Park Service
P.O. Box 25287
Denver, CO 80225

Dear Sir:

Thank you for providing the Bear Biology Association (BBA) with copies for review of the Revised Draft Environmental Impact Statement: Grizzly Bear Management Program (RDEIS) for Yellowstone National Park. As one of the BBA members most familiar with information on the Yellowstone grizzly population, I have undertaken to critically evaluate adequacy of the RDEIS.

Unfortunately, the time (60 days) allowed for review has been too short to permit each BBA reviewer to circulate his/her critique among the other members, as a basis for developing a joint critique representing views of the membership as a whole. So the views expressed below are strictly my own and may not be in accordance with those of other BBA members.

92 If the review period could be extended for at least another 60 days, a decision I urge you to make, it would permit the various reviewers in BBA and other organizations to exchange critiques and, where possible, achieve concensus. The resultant reviews would be even more representative of public opinion than current ones. This approach could also reduce the number and variety of reviews that NPS would have to evaluate and respond to. That should be advantageous to all concerned.

STRENGTHS OF THE RDEIS

Clearly, a great deal of concerned effort and far-sighted thinking have been devoted to trying to devise a management plan that can accomplish two partly competitive goals: (a) permanently preserving a viable grizzly population in the Yellowstone Ecosystem, (b) without undue inconvenience, much less danger, to humans using the Ecosystem.

The primary danger to Yellowstone grizzlies stems from their conflicts with humans. Rarely, grizzlies injure people encountered by chance in the backcountry. But most incidents are precipitated when bears are drawn to "cultural" foods possessed by the people, or to their garbage. Then, in attempting to obtain food or to protect what they have obtained or their

92 The National Park Service declined to extend the comment period in a letter to Mr. Stringham of February 11, 1982.

cubs or themselves, bears may be aggressive towards humans. Aggression usually consists only of threats; but on occasion a human is injured or, rarely, killed. Some bears persist in seeking cultural foods under conditions that endanger people, and a few seem chronically aggressive, perhaps provoked by old bullet wounds or other past aversive contacts with man. To protect people, therefore, these bears may have to be removed from the Park or even the Ecosystem — unless their behavior can quickly be rectified. Tolerance by the American public of viable grizzly populations on public lands, particularly in parks, depends upon keeping apparent dangers to people reasonably low. This in turn requires reduction of both real and imagined dangers as far as is feasible and desirable to users of the public lands, and commensurate with preserving the grizzly populations.

The RDEIS demonstrates both awareness by the National Park Service of the above facts, and plans for coping with them that are, in most respects, admirable. The primary strategy for minimizing dangerous bear-human encounters is to secure peoples' food (including garbage) such that bears cannot obtain it. This, hopefully, will discourage bears from attempting to obtain it, and eliminate their principal motivation for coming (dangerously) close to people. NPS plans for securing cultural foods from bears are comprehensive and well designed, based on many years of experience, experimentation, and careful thought. Although current methods are imperfect, substantial progress is being made.

To promote compliance with security measures, residents and visitors in Yellowstone are provided with literature of various sorts. The particular examples which I had read up through 1975 were too brief to provide all the information I would advise. But that may have been corrected during subsequent years.

93 In my opinion, literature provided to residents and visitors should be designed to accomplish two goals: First, it should inform visitors about how to secure their food and garbage, and to otherwise avoid dangerous encounters with bears. (I have drafted such a pamphlet myself for backcountry users; it has been given to NPS biologists at Great Smoky Mountains National Park). Second, readers should be exposed to a realistic viewpoint on just how dangerous the bears really are/aren't. One approach is to provide statistics on frequency of bear-inflicted injuries in appropriate perspective: How many people are injured or killed by bears each year; what percentage of the total park visitors or back-packers are they; how does this compare to rates of injuries and deaths from other causes in the Park, in other natural areas, and in developed (e.g., urban) areas of North America? Considered from this viewpoint, the chances of being injured by a grizzly are relatively miniscule, provided that one takes proper precautions. There is a vital need to make these facts known and to counteract influences of sensationalistic media presentations, such as the recent TV news magazine story about grizzlies "declaring war on people" in Glacier National Park.

Assuming that a fully adequate information campaign is being mounted: Then within the scope of considerations covered by the RDEIS the management program is excellent, a credit to the biologists who prepared it and to the National Park Service.

93 Warning literature and information on backcountry behavior is provided to park visitors as indicated in Appendix B.

93-A Whether or not it will suffice to permanently preserve a viable grizzly population in Yellowstone depends in part upon current viability of the population and the rate of man-caused removals of bears from the population in future years. Viability refers to (probable) capability of a population to sustain itself. For example, Shaffer (1978, in press) discussed management options in terms of maintaining a 95% probability of population survival. Viability is a function of both a population's size and its rates of reproduction, survivorship, and net emigration. The Alternative A management plan presented in the RDEIS should be successful in fulfilling its stated objectives if (a) the population is truely as viable, and (b) rates of removal (by NPS, stockmen, man-caused accidents with vehicles, etc.) are and continue to be as low, as the RDEIS indicates.

WEAKNESSES OF THE RDEIS

Unfortunately, there is good reason to doubt that the population really is as viable and that future removal rates will be as low as the RDEIS indicates. Worse, the RDEIS provides no contingency plans for altering management tactics to cope with these possibilities, as they may exist now or in the future.

A) Contingency Plans
(examples)

F-66

94 1) The minimum amount of "provocation" by a "problem" bear necessary to justify its removal from the population should depend in part upon how valuable it is to the population. The threshold for minimal provocation should rise as population viability declines, and probably should be higher for adult females than adult males.

2) When and if it becomes probable that the anticipated rate of removals could dangerously or substantially lower population viability — even if only over a period of several years — then additional measures should be taken to reduce necessity for removals. If dangerous declines cannot be detected until it is probably too late to counter them, then the additional measures to minimize number of removals should be standard operating procedure, rather than emergency procedure.

For example, efforts to minimize availability of "cultural" foods to bears could be supplemented with a program to reduce attractiveness of those foods to bears. Specific suggestions for such a program are given later in this letter.

95 3) Decisions on whether or not to provide supplemental food for grizzlies should be contingent upon whether natural food supply is or will probably become so low as to jeapordize viability of the grizzly population. This will also be discussed in more detail later.

93-A The final EIS recognizes the possibility of a declining bear population. See pages 28, 45-46, and 48.

94 We concur and believe that the proposed modified program as alternative A in the final EIS provides for standard operating procedures to reduce the need for bear removals. Such procedures include closing or restricting certain areas (see Figure 1 and page 5) to visitor use. Additionally, see Table 5, control actions, which indicates an average of less than 1 bear per year destroyed since 1973. The need to translocate or remove a bear is decided on a case-by-case basis, according to the situation, the bear's behavior, known history, its age and sex, time of year, condition of the bear, and similar factors. We believe these considerations are compatible with the commentor's suggestions.

95 We concur. This consideration is now a part of a modified management program as the proposed action in the final EIS. See page 12.

B) Doubts About Population Viability

The Appendix to the RDEIS contains numerous critiques of the original DEIS by a variety of reviewers. Many of them complained that the DEIS management plan for grizzlies did not take into account the full range of available scientific data and the interpretations thereof. Specifically, the extensive data collected by the Craighead team and interpretations of that data by the Craighead team (Craighead et al. 1974) and by the National Academy of Sciences (Cowan 1974), which contradicted the official NPS viewpoint, were virtually ignored.

The RDEIS does not correct these flaws. It is not demonstrably based upon the best available scientific data and interpretation. In fact, it may be at odds therewith.

96 I know of no attempt by NPS to contact individual biologists such as the Craigheads or myself, or the Bear Biology Association as a whole, so that our recent findings could be integrated and utilized for updating the tactics of grizzly management in Yellowstone. To devise and implement a management plan without such thorough scientific groundwork might be convenient or politic; but from a wildlife management standpoint, it would be so irresponsible as to warrant court action.

97 Therefore, it is crucial that NPS either prove that its management plan is compatible with the most reliable and relevant scientific data or modify its program to achieve compatability. Contingency plans should be provided to indicate how the program will be adapted to changes in population viability.

98 Equally important is the need to provide proof that research efforts by the Interagency Grizzly Bear Study Team and other research groups within the Yellowstone Ecosystem are adequately staffed and supported, financially and otherwise, to gather and interpret data on grizzly population ecology, and to do so quickly enough to assure preservation of the population. If adequate support is not yet available, perhaps due in part to NPS budgetary limitations, extent of the short-fall should be indicated so that outside support can be provided — for instance in the form of funds, personnel, consultants (e.g., on computer modeling), computer time, or PR.

In conclusion, no version of the EIS should be legally accepted as final until:

99 1) Proof is given that its management plans (e.g., Alternative A) are likely to be effective, judging from the best existing information on grizzly ecology.

100 2) Proof is given that capacity for monitering viability of the population will be adequately supported to assure obtaining sufficient information, quickly enough to detect and prevent substantial or rapid declines in population viability.

101 3) Contingency plans are presented for altering management tactics in accordance with changes in (a) reliable estimates or predictions

96 The work of the Craigheads, the National Academy of Science, and other researchers is recognized at several places in the final EIS. For example, see pages 28, 45, and 46. The National Park Service's principal contact is the Interagency Study Team. The team maintains contact with recognized authorities in bear research as appropriate, including the Bear Biology Association.

97 The proposed action in the final EIS is a modified program to achieve compatibility. The EIS has been updated with the most recent data available from the Interagency Study Team.

98 The study team is indeed staffed and supported as funds permit. Funds are requested annually to adequately support these efforts. However, the purpose of this EIS is to evaluate the park bear management program, rather than on the adequacies of the research team fundings. Adequate funding will continue to be sought annually as research needs indicate.

99 We don't know that absolute proof of the plan's effectiveness would ever be possible. However we believe the biological opinion received from the USFWS (see Appendix D), together with the most recent data that has been incorporated in this EIS, and the Yellowstone bear management plans compability with the Guidelines and the Recovery Plan are the best indications that the plan is intended to be effective.

100 See response 98.

101 See responses 94 and 95.

of population size, trend in size change, and other facets of viability, and in (b) basic understanding of grizzly ecology.

C) Monitering Viability of the Yellowstone Grizzly Population

Interpretations of the Craighead data by that team and by NAS indicated that population size had declined drastically (e.g., 45% according to one set of calculations). Furthermore, a computer simulation model devised by the Craighead team indicated that population density would continue to decline towards extinction unless appropriate counter-measures were taken.

Suggested measures were not taken, and man-caused removals from the Ecosystem remained for several years at a level suggested by the model to be dangerously high. Granted, the model has several weaknesses, including the fact that it assumes no compensatory shifts in reproductive and survival rates as population size declines: my own research (Stringham 1980, 1982, in press) and that of McCullough (1981) suggest that some compensation does occur. But whether it is adequate to offset man-caused mortality is still unknown. Nor am I confident that current censuses of the Yellowstone grizzlies are reliable enough to demonstrate that population size is not still declining or in danger of serious decline. Can reliable censuses and viability assessments be made until the majority of bears in the Ecosystem are individually distinguishable? Is there any feasible way to distinguish enough of them without reliance on artificial markings on a large proportion (e.g., half) of the bears — markers that are readily visible from at least 200m? If not, why have so few of the bears been so marked? RDEIS p.8, pgh.4 states that "A vigorous integrated research program will be continued, including: the development of census techniques ...". How vigorous has such development been? Has this goal received sufficient priority in the grizzly management program? If not, why not?

102

Before any final judgement can be made on adequacy of the RDEIS:

1) Current and proposed census methods need to be evaluated by experts, including at least one from the Bear Biology Association, who are independent of the National Park Service.

103

2) Rough confidence levels need to be established on current census figures. For example, certainty might be 100% that at least 100 grizzlies remain in the Ecosystem, but less than 50% that more than 200 remain.

If current censuses are judged reliable enough (e.g., at the 95% confidence level) to assess viability of the population, then management should continue to be based thereupon. For in that case, given that current censuses suggest reproductive rate is sufficient to offset current and projected rates of natural and man-caused removals from the population, then the current management program should continue to effectively preserve the population.

102 The text has been revised concerning bear population sizes and trends. See pages 28 and 45-46. See response 39 about marking. The Interagency Study Team was established in 1973 and the development of census techniques has continued to be a high priority of the team since that time.

103 See responses 94, 96, and 102. The final EIS recognizes the possible decline in the grizzly bear population. We believe the proposed modified management program should reduce the need for control actions. See pages 46-47. Table 5 shows that as the program has developed, control actions and numbers of bears destroyed has decreased markedly since 1972. Also see research objectives, page 11.

Stephen P. Stringham: RDEIS review for NPS, 24 January 1982 6

3) However, if current censuses are not judged reliable enough to detect dangerously low viability or danger of serious decline, then:

a) Probable viability should be estimated from models based on the most reliable, relevant data available.

Either projections of the Craighead et al. (1974) model should be accepted as roughly correct; or projections should be obtained from newer, improved models. Bunnell & Tait (1981) and Shaffer (1978, in press) have designed models of the Yellowstone population which could provide some indication of its probable viability. An even more comprehensive model is being devised by myself in conjunction with the Craighead team. However, it will not be ready until at least March 1982 for use in estimating current viability.

If projections from these models confirm that of the Craighead et al. (1974) model, namely that viability is declining dangerously, then — in lieu of reliable census data to the contrary — such a decline should be assumed to be underway. Measures should be undertaken to reverse that trend until viability again reaches a self-sustaining level (e.g., at the 95% probability level). All other management tactics, such as marking bears for censusing purposes, providing them with food, or removal of all but the most dangerous individuals, should be subordinate to this.

c) If censuses or models indicate that population viability is high enough to withstand the stress of censusing practices, then these should be continued. Unless individual identification by natural idiosyncracies of appearance, behavior, or location, suffice to assure adequately reliable censusing, then enough bears should be marked to achieve that goal.

(1 First priority should be given to assuring that censuses are reliable enough to quickly detect dangerous declines in viability.

(2 Second priority should be given to further increasing census reliability to the point where scientific needs are met for elucidating grizzly ecology -- to assure long-term preservation of that and other populations, and for other goals.

(3 Rate at which censusing practices are improved should depend upon:

(a. Tolerances by the bears for stresses of being marked, censused, etc.

(b. Urgency of obtaining better censuses:

The less time probably available in which to detect and counteract a dangerous decline in viability, the greater the urgency for determining whether such a decline is actually underway.

Scientific needs also favor rapid attainment of highly reliable censusing.

(c. Budgetary and logistic limitations: If funding or other support is inadequate to permit better censusing, this should be revealed so that attempts to secure outside support can be made.

(d. Some Park visitors object to marking of animals because they think it cruel. Others find markers unesthetic; they think the bears are less photogenic with colored plastic streamers in their ears or radio telemetry collars on their necks. A poll is being conducted in Great Smoky Mountains National Park to assess how many visitors actually object to marking of animals.

Even where prejudices exist, proper public education might alleviate that impediment to research. Educational efforts might involve display at visitor centers of photographs of marked bears. Each photo could be accompanied by information on the individual's age, sex, reproductive history, home range, etc. Individual bears might even be given descriptive names (e.g. "Scarface") or Amerindian-sounding ones (e.g. "Thunderpaw"). This could stimulate public interest in knowing which individuals they are seeing — if any — and in welfare of the bears.

D) Food Supply

104 Alternative E of the RDEIS (Maintain Grizzly Bear Population by Artificial Feeding) would best be presented not as a separate alternative, in current form, but revised as an option under an improved version of Alternative A. Its implementation should be contingent upon inadequacy of natural foods.

According to RDEIS p.21, pgh.2: "Food ... is not a limiting factor for the grizzly bear population and it is doubtful that a supplemental feeding program would modify the size of the population."

1) On the contrary, there is strong evidence of limitation by food supply in Yellowstone, just as for most other well-studied bear populations. References in support of this are so numerous that I will cite only the most relevant in the following discussion.

a) Annual number of visitors to Yellowstone has risen fairly steadily since at least 1920 (RDEIS, Fig. 9).

104 We agree. Supplemental feeding is included as part of a modified management program in the final EIS. See page 12.

Consequently, amount of garbage available to bears rose too until the late 60's, when efforts were begun to restrict availability. In 1966 incineration of garbage was initiated; from 1968-71, open-pit garbage dumps within the Park were closed to bears, drastically reducing this source of food. Dumps outside the Park were closed over the next several years, as documented in the RDEIS.

As amount of available garbage rose, so too did population size, reproductive rate, and perhaps survival rates. When availability of garbage declined drastically, so too did population size and litter size (Craighead et al. 1974, 1976; Stringham 1980, 1982, in press). Litter size dropped 24% from the 1959-68 mean of 2.23 to a low of 1.7 in 1974 and has continued low ever since (Craighead et al. 1974; Knight et al. 1975, 1980). Granted, this seems to have been due in part to coincidental worsening of winter severity for several years (Picton 1978). But dump closure was the major influence, due primarily, it would seem, to reduction of available food (Stringham 1982).

b) In both grizzly/brown and black bears, maturation rate to reproductive competence can vary from ages 3 to 10 years, depending upon nutritional status — judging from data on wild populations and on captive bears. (see reviews by Stringham 1980, 1982; and by Bunnell & Tait 1981).

c) If nutritive status of females in autumn is too poor, many that have been bred still fail to produce viabile litters (Jonkel & Cowan 1971; Rogers 1976, 1977).

2) If a viable grizzly population can be maintained in the Yellowstone Ecosystem without supplemental feeding, then supplemental feeding should be avoided. But if available habitat is or becomes too small to maintain the population, or man-caused mortality is intolerably high, then, at least in years when natural food supply is poor, enough supplemental food should be supplied, temporarily, to sustain the population. The lower the initial viability of the population, due either to low size or poor condition, the more crucial this will be. Determination of adequacy of natural food supply should be based, in part, upon documented nutritonal status and rates of reproduction and survival. If population size is dangerously low, and rates of reproduction or survival could be enhanced by supplemental feeding, it should be done until population viability is assurred (e.g., at a 95% probability level).

a) It would be unrealistic to suppose that any specific area of habitat, even one as large as Yellowstone National Park, could necessarily support any particular large mammal species indefinitely. Historically, an area may have been rendered temporarily uninhabitable, leading to death or emigration by entire populations. This could occur as the

result of fire, ecological succession, or other natural events. Re-population of the areas, when conditions recovered, would have depended upon immigration.

In the case of grizzly bears and some other species in the Yellowstone Ecosystem, possibilities for natural re-population no longer exist. So we dare not manage these bears or their habitat as though natural re-population were possible. Any year when supplemental feeding is necessary to offset natural shortages, to prevent population viability from dropping dangerously low, it should be done.

To call this "maintaining the population ... at abnormally high levels" (RDEIS, p.20, pgh.1) would be nonsensical. For limited size of the Yellowstone Ecosystem, and lack of opportunities for repopulation, are already unnatural conditions whose influences may need to be counteracted, if only by other "unnatural" influences — fighting fire with fire, so to speak.

b) Greater priority should be given to preservation of the grizzly population than to "naturalness" of the means by which that is done, even though "unnaturalness" should be minimized as much as possible commensurate with higher priority goals.

c) Contrary to implications on RDEIS p.20, pgh.1: Artificial feeding of elk and other large mammals is not necessarily harmful to the populations. In Europe, elk (red deer) are commonly maintained by artificial feeding during winter; this is necessitated not by overpopulation but by loss of winter habitat to humans.

d) In Yellowstone, ungulate (e.g., elk, cattle, sheep, or horse) carcasses could be provided (e.g., by helicopter) at scattered locations away from developed areas, back-country campsites, and trails. That would avoid "unnaturally" concentrating the bears or endangering people — by contrast to the method considered in the RDEIS p.58.

e) Aggregation of bears at food concentrations becomes unnatural only when the aggregations are unnaturally large or persistent, as occurs at garbage dumps, but not at carrion.

f) It is to be hoped, of course, that supplemental feeding will never be necessary.

E) Rectification of "Misbehavior" by Bears

In the event that demonstration can be made that the grizzly population is large enough and in good enough condition to be viable (e.g., at the 95% level of probable survival), and that man-caused mortalities will remain tolerably low, then efforts to control bear-human conflict levels by removing "problem" bears and reducing availability of cultural foods to bears, may suffice. But, if as the Craighead model predicts, the population is in serious danger of extinction, some changes in management tactics will be necessary to further reduce the number of bears removed from the ecosystem.

Properly securing food and garbage is obviously essential for minimizing tendency of bears to try to seek that edible material. This applies equally to major campgrounds and to backcountry campsites. Nevertheless, it is less adequate under backcountry conditions. Some bears learn to ambush backcountry hikers and campers before their food and garbage can be secured, or when it is removed from security for consumption or packing. People are "forced" to surrender their food to the bears. This has been well documented for black bears in both Yosemite and Great Smoky Mountains National Parks, and is at least a potential at Yellowstone. I have also seen it done by grizzly/brown bears at Katmai National Monument in Alaska while I was studying bear-human interactions there for the National Park Service.

105 Consequently, the "best" ways I know to (a) prevent such banditry by bears are to (a) prohibit backcountry visitors from carrying food, or (b) reduce attractiveness of the food to bears, for instance through use of the "Garcia Effect" or other behavioral modification techniques. I consider it imperative that high priority be given in Yellowstone National Park to investigating and implementing the latter option.

106 Proposals to test the effectiveness and efficiency of such methods have been rebuffed by key officials in NPS, despite the high probability that they are already or will soon become necessary. NPS has provided no documentation that the necessity does not exist, much less that the methods are inappropriate.

P) There are, of course, many other points of the RDEIS which deserve critique. But, having covered those that I consider most critical, I will leave the rest to other reviewers.

Thank you for this opportunity to review the RDEIS. I hope that my comments will help NPS refine its plans for managing grizzlies in Yellowstone National Park, so as to increase the probability of success in preserving the population as an integral part of the whole Ecosystem, in as "natural" state as possible, without undue inconvenience or danger to people. This is a serious responsibility which NPS has so far executed successfully — perhaps as much by good luck as by good management — for which I am grateful. While I have been critical of some NPS plans or policies, it should not obscure the fact that this is intended only to help perfect an otherwise excellent management program.

105 We believe that prevention of behavioral changes in bears through regulation of human use is preferable. Consequently, the bear management program gives such regulation high priority.

106 The National Park Service has no evidence that behavioral changes in the grizzly bear population have occurred. Therefore, we believe such proposals would better be tested elsewhere.

Stephen P. Stringham: RDEIS review for NPS, 24 January 1982 11

I would also like to thank Richard Strait, Associate Regional Director of NPS, for responding to an earlier letter which I wrote concerning the RDEIS before seeing it.

Sincerely,

Stephen F. Stringham

Stephen P. Stringham
Ecologist

COMMENTS

RESPONSES

Mr. Charles H. Ellis III
1809 Wren's Nest Road
Richmond, Virginia 23235

January 29, 1982

Regional Director
Rocky Mountain Region
National Park Service
P.O. Box 25287
Denver, Colorado 80225

Dear Sir/Madam:

The alternative proposals for grizzly bear management must be analyzed with the essential purposes of a national park in mind. These are, for Yellowstone as for most other parks, preservation of the natural values, phenomena, and beauty inherent in the Park, and provision of opportunities for visitor enjoyment and education provided such opportunities do not impinge upon the natural values or threaten their future. Your job, and that of everyone in the Department of the Interior, is to protect and conserve our natural resources and ensure their wise use (as the inside back cover says) so that certain lands, scenery, and resource values will be left undisturbed no matter how much we are concerned about worldly (and ultimately mundane) matters such as oil, the comforts of the city, the pursuit of wealth, or the operation of the economy.

So much for the sermon. It would seem that continuation of your present program,as outlined on pages 2 through 16 of the document, is the best and most responsible way to manage grizzly bears in Yellowstone. Since the bears are an endangered species, the goal of your efforts should be to ensure species survival through a combination of measures - research,solid waste control, conflict resolution, protection of critical habitat, reduction of unnatural visitor contacts with bears - designed to teach us more about bears,to minimize unnatural behavior and conflicts with visitors, to encourage sustainable feeding habits, and so on. With regard to the management of solid waste and necessary cooperation with neighbors, the neighboring jurisdictions must accept reasonable restraints on their development and their waste management processes as the reasonable price of proximity to one of the Nation's "Crown Jewels." If this means more stringent land use controls than the local entrepreneurs would like, so be it. The critical habitat proposal should be revived pronto unless it can be proven to all of us that our children and grandchildren and the bears have inferior claims respecting the land in question than do the energy corporations. Continuating of the present program would, in short, strike the best balance between man's proclivities and nature's needs, and provide enjoyment and necessary preservation efforts.

No response needed.

Alternative B (No Action) would constitute a shirking of your duties in light of the known need (page 1) for a coherent policy regarding the interaction of bears and people. Alternative C (Remove Bears) would make the Park foolproof for human visitors at the cost of one of the Park's inherent values and purposes, which is the presence and protection of native fauna. Alternative D (Further Visitor Restrictions) would serve legitimate Park values only insofar as it rids the Park of noisy campers and large camping vehicles; however, camping is a legitimate and enjoyable way to appreciate nature at close range if done properly. Alternative E (Artificial feeding) might lead to weakness and overdependence on the part of the bears. These traits would be lethal to the bears in the event of a serious interruption in the feeding or the protection such as that caused by a major snowstorm or sudden disease. None of these alternatives makes as much sense, or is as consistent with Yellowstone Park needs and the management principles I mentioned earlier, as the present management program, Alternative A. For this reason, I reiterate my support of Alternative A.

Thank you for the opportunity to comment.

Sincerely,

Charles H. Ellis III

No response needed.

C O P Y

28 January 1982
N. 19613 Little Spokane Drive
Colbert, Washington 99005

Mr. D. Surle (sic)
National Park Service
Rocky Mountain Regional Office
Denver, Colorado 80225

Dear Mr. Surle:

I have reviewed the revised draft environmental impact statement (R.D.E.I.S.) for the Yellowstone National Park Grizzly Bear Management Program and would at this time like to say that I am pleased to see that the emphasis in Alternative "A", the proposal of the National Park Service (N.P.S.), is on people management. I am in general agreement with Alternative "A". I would like however to make a few comments on the statement as a whole before listing my comments on individual parts of the statement.

107 The disagreement between the Craigheads and the N.P.S. on the rapid closure of the park dumps in 1970 has been long known, and has only served to slow progress towards effective conservation of the Yellowstone grizzly population. I feel after reading the R.D.E.I.S. that the N.P.S. has taken a much too defensive attitude towards this situation, and there by may, in the eyes of some, erode the credibility of the position of the N.P.S. If the data available on the Yellowstone grizzlies truely (sic) supports the stand of the N.P.S., then these data should be presented more fully and accurately than they are in section III of the statement.

108 I also believe that Alternative "C" should not be included in the section of management alternitives (sic) for serious consideration. Not only would it be in violation of the Endangered Species Act, but also the extablishment act of 1872, in which Yellowstone National Park was dedicated. Brief mention of this alternative should be possibly under section I, with reference as to why it is not worth serious consideration.

Comments on specific portions of the statement are as follows:

109 Section I, paragraph r, sentance (sic) 2. The period of time when the closing of the garbage dumps could influence grizzly distribution is not over, nor will it ever be, in my opinion. The grizzlies distribution in Yellowstone N.P. will always be affected by these closures in that they will never again be distributed as they were during the open dump years, unless the dumps were once again re-opened. Present distribution is no doubt now much more similar to what it was before the settlement of the white man in the Yellowstone region. This may not be advantageous to the grizzly at this time due to increased conflicts with resource management outside of Yellowstone N.P. boundarys (sic), but may, as the N.P.S. believes, help reduce intraspecific compitition (sic) among grizzly bears within the park boundarys (sic).

107 The final EIS recognizes the possibility of a declining grizzly bear population and the proposed action presents a modified stance by the National Park Service to meet that possibility. See responses 96 and 103.

108 See response 10.

109 We concur that the bear distribution has changed since closure of the dumps.

C O P Y

110 Section II, page 6, paragraph 11. The posibility (sic) of transfering (sic) grizzlies to other states and wilderness areas is a valuable asspect (sic) of the Yellowstone Grizzly Bear Management Plan, and may warrant further detailing of how such negotiations between the N.P.S. and other agencys (sic) would take place, and what the criteria for the actual transplanting would be. The re-establishment of other grizzly bear populations within the lower 48 states perhaps would lessen the burden of stringent grizzly management now put on existing grizzly populations (i.e. Yellowstone N.P.).

110 The text has been revised. See pages 10 and 47. Additionally, the Guidelines provide criteria for translocating bears to other agencies jurisdiction.

111 Page 18. The statement here lists many excellent reasons why the Yellowstone grizzly population should be maintained. These points should be stressed in "bear pamphlets" and interpretive programs.

111 We concur and such emphasis is included in the park's bear literature and in interpretive programs.

112 Page 20, paragraph 1. The comparison of the effects of artificial feeding on wild ungulates and grizzly bears is unsatisfactory. The consern (sic) here is the great difference in the biotic potential between ungulates and bears. There is evidence that a highly nutritious food source may increase the reproductive rate of a bear population. This could have, in the past 80 years, have helped compinsate (sic) for the loss of bears around the periphery of the Yellowstone ecosystem due to habitat loss and physical conflicts with man, which are still increasing today.

112 We agree. See response 104.

113 Page 27-28. The discription (sic) given of present distribution of the grizzly bear in the lower 48 states is in urgent need of updating. There have been several recent confirmed sightings of grizzly bears and grizzly bear sign in northeastern Washington State, as well as 2 verified sightings in the Sawtooth Mountains of central Idaho State (see annual report of the Interagency Grizzly Study Team, 1980).

113 Figure 5 has been revised to coincide with the Recovery Plan.

114 Page 29, paragraph "E". In addition to the population data given here, more recent data and comments from the latest report of the Interagency Grizzly Study Team should be included. The 1980 report states that the present population estimation is from small sample sizes, that its accuracy cannot be assessed at this time, and the data that is available indicates the Yellowston grizzly is walking a "tight-rope".

114 The EIS now contains the most recent data. See page 28.

115 Page 24. Although the wilf (Canis lupus) is listed as presently a part of the Yellowstone N.P. fauna, it should be acknollegded (sic) that it is virtually absent from the Yellowstone ecosystem, and having little or no effect as a predator on existing wildlife populations. The effects of its absence, however, should be mentioned. Unusually highs have taken place in Yellowston ungulate populations. These fluctuations may have affected the availability

115 See response 12.

C O P Y

of wild ungulates, in the form of carrion, as a food source for the Yellowstone grizzlies. Also the utilization of wolf kills as food by grizzlies would not be occurring.

In closing I must give my appologies (sic) for sending my comments on the R.D.E.I.S. in such a terribly crude form. Tiem has not permited (sic) me to properly present my comments in a typed and well organized critique.

Respectively,

Rodney B Pharmess
Wildlife Technician

N. 19613 Ltl. Spk. Dr.
Colbert, Wash. 99005

NATIONAL WILDLIFE FEDERATION

1412 Sixteenth Street, N.W., Washington, D.C. 20036 202—797-6800

January 29, 198

Ms. L. Lorraine Mintzmyer
Regional Director
National Park Service
Rocky Mountain Regional Office
Post Office Box 25287
Denver, Colorado 80225

Dear Director Mintzmyer:

We are enclosing the comments of the National Wildlife Federation on the Revised Draft Environmental Impact Statement - Grizzly Bear Management Program, Yellowstone National Park, Idaho, Montana, Wyoming (DES 81-49).

116 In its present form this document is inadequate to guide the activities of the National Park Service (NPS) in the management of grizzly bears in Yellowstone National Park. The deficiencies pointed out in reviews by the NPS Office of Park Planning and Environmental Quality (L7619(135) - dated August 11, 1980) and the NPS Natural Resources Division (N1615(482) - dated July 11, 1980) have not all been adequately addressed (we have attached copies of these documents and ask that they be entered into the record of public comment). More specifically, there is no evidence demonstrating that NPS has formally consulted with the U.S. Fish and

117 Wildlife Service as required under Section 7(a) of the Endangered Species Act. NPS's preparation of a new management plan is a federal action under Section 7 and thus must comply with the requirements of Section 7. NPS cannot excuse consultation in this matter merely because of past involvements in the Section 7 process relating to the issue of grizzly bear management. Moreover, we find that there has been inadequate involvement of other state and federal agencies and the Interagency Grizzly Bear Study Team (IGBST)

118 in the development of this RDEIS. Data available from the IGBST and other sources are in some cases contradictory to data used in this RDEIS and these differences must be discussed or reconciled before the final EIS is presented.

It is disturbing that NPS has chosen to ignore evidence that this population of grizzly bears may be declining or is unstable at best. By ignoring this evidence and continuing to pursue outdated NPS policies in the management of these threatened mammals, NPS may be jeopardizing the existence of this population. We submit that

119 these data demonstrate a strong need for formal consultation with FWS regarding the impact of the plan on the bears. Furthermore, the data indicate that NPS is not meeting its statutory obligations under Section 7 to utilize its programs in furtherance of the purposes of ESA for the conservation of endangered and threatened species.

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116 The reviews by the National Park Service Washington Office which were attached to the commenting letter contained comments on an earlier draft of the EIS. Those comments were incorporated in the Revised Draft EIS, and the final EIS goes farther to utilize the most recent research data. The earlier National Park Service reviews are not appropriately a part of the record for this final EIS.

117 Section 7 consultation was requested and received. See Appendix D.

118 We do not agree that there has been inadequate involvement of others. The original draft EIS included a number of invited comments from the USFWS, concerned state agencies, organizations, and individuals. The Revised Draft EIS simply updated some of the earlier information and placed the document in the format approved by the Council on Environmental Quality's regulations. The final EIS utilizes the most recent research data and has been changed to reconcile any conflicts that existed.

119 The text has been revised. See pages 28 and 45-46. Also see response 117.

120 It is especially disturbing to see the rather casual manner in which bear removal and destruction are treated in this plan. Indeed, we believe that if decisions to destroy bears are being made in the casual manner presented in this plan, that NPS, in many specific instances, may be in violation of the Endangered Species Act requirement that federal actions not jeopardize the continued existence of threatened and endangered species.

121 We also question whether the grizzly bear is given adequate consideration in relation to Park development plans. Development plans for Grant Village will result in expansion into a prime grizzly feeding area. The RDEIS claims the grizzly population can sustain the loss of bears that may result from this development. There is no evidence or justification for this decision. Again NPS must consult with FWS on this matter.

In view of the inadequacies of the proposed management plan, we recommend that the Park Service determine the true status of the grizzly bear in Yellowstone and develop a biologically sound management plan, in consultation with FWS, that will promote the continued survival of the grizzly bear in Yellowstone.

Sincerely,

W. Alan Wentz

W. ALAN WENTZ, Ph.D.
Director
Fisheries & Wildlife Program

Timothy G. O'Brien/wAW

Timothy G. O'Brien
Research Intern
Fisheries & Wildlife Program

Enclosures

cc: Director, National Park Service

WAW:TGO/ob

120 The plan for control of problem bears contains a number of criteria and checks and balances that must be considered before a bear is removed or destroyed. We do not agree that this is treating problem bears in a casual manner. Moreover, see the biological opinion in Appendix D. Also see page 47 concerning the need for fewer control actions.

121 Consideration of the bear management program in park developments has been included in impacts of the proposed action. See Table 1. A biological opinion on the Grant Village proposal was received from the U.S. Fish and Wildlife Service on October 25, 1979. That opinion stated that ". . . the proposed development within Grant Village is not likely to jeopardize the continued existence of the grizzly bear . . ."

COMMENTS

GRIZZLY BEAR PLAN FOR YELLOWSTONE RDEIS

Comments are presented by Section, page and/or paragraph, where appropriate.

PREFACE

122 The comment referring to resolution of the garbage dump closure controversy is inaccurate. Although the issue has been muted by time, there is still debate over mortality rates during the late 1960's and 1970's, and over population estimates (Craighead 1974; Cole 1973, 1974; Cowan 1974; Knight 1975; McCullough 1978; Roop 1980; Stringum 1981).

122 The text has been revised to include the most recent data and to recognize the opinions of earlier researchers. See pages 28 and 45-46.

II. A.2, pg. 2.

123 Education efforts should stress more than the esthetic value of the bears. It should also emphasize ecological value and the role of grizzly bears in the Yellowstone ecosystem. The provisions for education and enforcement should be adequate providing sufficient funding is available to hire seasonal help.

123 See response 67.

II. A.3, pg. 4.

124 Bear proofing would require a major expenditure for materials and manpower. The availability of funds for such expenditures in these times of budget reductions seems doubtful. If funds are limited, bear proofing seems much less important than other management needs with which it may compete. It is also unclear if bear proofing is effective in preventing access to campgrounds by bears. In general, the success of sanitation measures will be determined by funding levels. If enough seasonal help is available, "litter-free" goals and trash collection goals may be achievable. The adequacy of funding in regard to sanitation, education, and enforcement may act as a barometer for the Park Services' commitment to effective Grizzly Bear Management.

124 See responses 56 and 69.

II. A.4, pg. 5.

125 No provision is made in the plan for reporting any taking of grizzly bears to the U.S. Fish and Wildlife Service (FWS) Division of Law Enforcement as specified in 50 CFR §17.40(b)(i)(c)(3). Such provision should be added.

50 CFR §17.40(b)(i)(f) states that "The regulations of the National Park Service shall govern all taking of grizzly bears in National Parks." The Park Service apparently has no regulations governing the taking of grizzly bears (see 36 CFR §7.13). The lack of these regulations makes the taking of any grizzly bears

125 See response 3.

for reasons other than imminent threat to human life open to legal question. If bears are to be taken for any other reasons, including bears that may have killed or harmed humans, such regulations should be developed. The provision for an annual bear management plan is much too vague. Management and reporting
126 procedures for the annual plan should be outlined or presented in detail in this RDEIS. It should be clearly stated that each annual plan should reflect the objectives of the long-term for grizzly bear management.

126 The text has been revised. See page 2.

II. A.4, pg. 6.

127 Bear proofing procedures are again alluded to and need to be explained. The phrase "unnaturally aggressive" is not defined and is inappropriate as a measure of the need to move or destroy a bear. Research is needed to typify grizzly bear behavior and safeguards are needed to assure that normal behaviors of bears, including agression, are not misinterpreted by Park personnel as unnatural. In the meantime, such criteria should not be used.

127 The text has been clarified concerning "bear-proofing." Also see response 32.

II. A.4, pg. 6.

This RDEIS, the recommendations of the Interagency Grizzly Bear Study Team (IGBST) Technical review panel, the National Park System Advisory Board and others include a need for vigorous
128 research programs to determine population dynamics. To accomplish these goals, the ability to recognize individuals, or at least previously captured animals, from a distance is essential. Small ear tags may hinder rather than help the process. Cole has claimed the Craigheads' color marked visible tags were offensive to photographers and were therefore removed whenever possible (Gilbert 1976). If the alternatives are a photographer's aesthetic sensibilities versus much needed grizzly bear information, the choice should be the one that favors the grizzly and its survival, regardless of National Park Service employee's opinions.

128 Only radio markers are used now for research purposes. The small ear tags are only utilized to confirm that a bear has been handled before for management purposes. The tags are not meant to be visible at a distance.

No bear should be destroyed in or adjacent to Yellowstone unless a direct threat to human safety is demonstrated and until
129 clear decision-making criteria are developed. Any bears killed in the Park should be turned over to the IGBST for scientific purposes. Any bear killed in the Park must be reported to the FWS Division of Law Enforcement in writing within 5 days as required by 50 CFR §17.40(b)(i)(c)(3).

129 See responses 2 and 3.

II. A. 4, pg. 7.

130 "Emergency situations" should be defined. Decisions to destroy a grizzly bear should be based on criteria defined in the Endangered Species Act and not on the opinion of a park superintendent.

130 See response 3.

II. A.6, pg. 7.

131 A written report should be prepared immediately (on-site, if possible) in addition to the phone or radio report. Data to be included in such a report should be determined in conjunction with the IGBST.

131 The EIS notes that the communications center prepares a written report. This is done simultaneously with the radio or telephone report.

II. A.7, pg. 8.

132 It is generally agreed that current knowledge of grizzly bear population size, characteristics, and status is required for proper management (Roop 1980 - Annual Report IGBST 78-79, IGBST Technical Review Panel 1981). Data are needed on population trends, behavior and social interactions, mortality (especially poaching data), age structure, sex ratio, recruitment, population size, dispersal, resource inventory, habitat requirements, and land use impacts. The Park Service should not only encourage grizzly research by outside groups but should actively seek outside help. At the very least, the current research funding levels should be maintained, and, if possible, the funding should be substantially increased. The funding is essential if the Park Service wishes to obtain the knowledge necessary to effectively manage grizzly bears.

132 See responses 96 and 98.

II. A.8, pg. 9.

133 Since this is a management plan, management policy, principle, and provision need to be spelled out in the plan, not referred to the Guidelines.

133 Alternative A spells out policies and principles of bear management in the park. Pages 8-9 refer to interrelationships with activities outside the park and properly reflects the Guidelines.

II. A.8.b, pg. 9.

134 This proposed management plan requires a formal consultation with the FWS Office of Endangered Species (see PL 95-632; 92 STAT. 3751) for each management action. This management plan should not be implemented until the Grizzly Bear Recovery Plan is finalized and it is demonstrated that the two plans do not conflict.

134 See response 6 and 66.

II. A.8.c, pg. 10.

135 The topic of bear mortality inside and outside the park is crucial to the management plan. This section is almost ignored by the EIS, and what is not ignored is misrepresented. "All data collected by the IGBST suggest that only one grizzly bear population exists within the Yellowstone ecosystem. . ." (IGBST Technical Review Panel 1981), yet the EIS clings to old claims (Cole 1974) in distinguishing between Park bears and bears outside the Park. The EIS ignores Craighead's (1980) data on movement of bears from site of capture inside the Park to site of death outside the Park.

The data presented for mortality outside the Park (Text) and inside the Park (Table 7, grizzly kills only) indicate that from 1970 to 1973, 182 grizzly bears were eliminated. This figure represents only reported kills and indicates a very severe impact on the population regardless of the population estimate.

135 The text has been revised to recognize the impacts of bear mortality both inside and outside the park. See pages 47-48 and Table 9.

The most current mortality estimate for 1975-1979 averages 11 known deaths per year (Blanchard et al. 1980). Unreported grizzly bear mortality is unknown but believed to be substantial. With livestock conflicts and grizzly bear hide values of up to $12,000/hide, the incentive to kill grizzlies remains high, while legal actions against poachers remain low. This mortality level is unacceptably high. Dr. Jack Gross demonstrated through simulation that an increase of only three to four bear deaths per year can mean the difference between a rapidly declining population and one that is stable or increasing if initial population is between 150 and 200 bears (Roop 1980). Roop concludes a population of 300-350 bears should have recovered by 1980 if mortality estimates are accurate.

The EIS must address these problems if the National Park Service wishes to effectively manage grizzly bears.

II. A.9, pg. 10

136 Designation of critical habitat for Yellowstone grizzly bears is needed to assure recovery of grizzly bears.

II. A.12, pg. 14.

137 A figure showing the stratification of grizzly habitat on forest service land and acreages in each stratum is needed. Blanchard, et al. (1980) report that sheep are grazed on about 11% of the IGBST study area and, in 1978-79, 37% of all known grizzly bear mortalities occured on this area. Griffel (1978) states that sheepherders openly admit killing any bear seen. This sheep range is grazed for about three months of the year according to the National Park Service Advisory Board. The money spent following sheep activities in this area is disproportionate to the values involved. The Board has recommended eliminating sheep grazing on Targhee National Forest allotments next to the south border of the Park. The IGBST has also recommended elimination of sheep grazing and their Technical Review Panel feels the evidence is sufficient to support the recommendation. This alternative should be implemented.

II. A.13, pg. 15.

138 No documentation is presented to support the assertion that fewer cubs would be killed by other bears as a result of this plan. Park's operating budget for 1981 was $9.1 million. $275,000 is not a major portion of the budget. This plan does not guarantee a reduction of man's impact on grizzly bears or the environment. Other agencies already are involved in preservation and management of grizzly bears. These statements infer that the Park Service is the only agency active in management. This plan does not make it clear if or how activities of local residents are restricted in favor of the grizzly. Other proposals on this page are not evaluated in the interest of brevity.

136 See response 8.

137 Grazing and its relationship to bears are more appropriately discussed in the Guidelines and the Recovery Plan, rather than in the EIS. However, see pages 13, 16, and 48.

138 See responses 80 and 81. The text has been amended in Table 1 regarding other agencies and local residents' activities.

III. C., pg. 26-27.

Cowan (1974) gives adequate historical background on distribution. The EIS should not cite Allen (1942), Armstrong (1972), Bailey (1931), Cahalane (1964), Elton (1954), Hall & Kelson (1959), and Harper (1961). These are not references--
139 they appear in the quote. The only purpose served by citing these authors is inflating the Literature Cited section.

III. D., pg. 27-28.

140 Cowan (1974) states that the present status of the bears is unknown.

III. E., pg. 29.

Use of Cole's (1974) data is invalid since the National Academy of Sciences (1974) rejected his findings and the IGBST
141 rejected his notion of multiple populations. This plan should use the latest and best data available. Roop (1980), a report on past and present population estimates, is one such report that should be examined.

The Knight et al. (1976) assertion of a stable or increasing
142 grizzly population in the study area is not based on scientifically acceptable data. The two year lapse between this and Cowan's (1974) finding of unknown status did not produce evidence to substantiate this claim.

Knight's (pers. comm., 1979) assertion of an increasing
143 population is, again, unfounded as determined by the IGBST Technical Review Panel. Furthermore, Knight has no recollection of ever making this statement.

Current opinion, as determined through our conversations with the Office of Endangered Species, Grizzly Bear Recovery Coordinator, and from recent literature, such as Roop (1980), is that the grizzly bear population in the Yellowstone Ecosystem may be experiencing a decline.

The National Park System Advisory Board considers the problems faced by the grizzly bear to be serious enough to warrant changing the status of the grizzly to endangered in the lower 48 states.

In view of these findings and opinions, a declining popula-
144 tion alternative is required and consideration for changing the status of the Yellowstone ecosystem grizzly bear to endangered may be appropriate.

The data presented in this EIS is dated at best and sometimes
145 erroneous in view of current information. The absence of current data and accurate representation of grizzly bear biology in a management plan supposedly based on the best scientific information available makes that plan highly questionable. The scattering of biological

139 The comments refer to a direct quote which we believe should be in its entirety. However, we will not use the references in the References (Appendix A) unless they appear elsewhere in the EIS.

140 We do not understand the comment. The quote in question discusses distribution, not status. See pages 26-27. However, see page 28 concerning the evaluation by Knight, et al on population size.

141 Item E, page 28 is simply showing there was a difference in population estimates. The EIS now also uses the latest data (Knight, et al 1982) available. Roop was included in Knight's 1980 report, but we have chosen to use the most recent report.

142 See response 141 regarding latest data.

143 This statement has been deleted from the final EIS.

144 The proposed action, alternative A in the final EIS, a modified management program responds to the possibility of a declining grizzly bear population. As to the "threatened" status, see response 65.

145 The text has been revised to use the latest data available as appropriate and also to correct citation errors.

data throughout the plan, rather than in a single section, makes it very difficult to follow discussions and evaluate data. A coherent and accurate presentation of bear biology is required in order to evaluate this EIS. The best available data on population trends are needed. Most of this information is readily available in the recent literature.

Closer attention should be paid to proper use of citations since at present some literature appears in the bibliography and not in the text and some literature appears in the text and not in the bibliography.

146 III. G.1, pg. 40.

The reason cited for difficulty in seeing black bears is speculative and should be eliminated.

147 III. G.1.b, pg. 43.

The park employee estimate of 500-650 black bears is not documented or supported in any way and should be eliminated unless documentation for the estimates is available.

148 IV. A.1, pg. 46.

The professional level of data collected by IGBST is still insufficient to base management and impact plans on, according to IGBST Technical Review Panel.

149 IV. A.1.a, pg. 46

Documented changes in population level following management actions are inadequate and not referenced. Additional impact considerations need to be made based on a declining bear population.

150 IV. A.1.a, pg. 47.

Paragraph 2 is tantamount to a disclaimer of responsibility for grizzly bear survival. There is also no evidence to support the contention that the management action did not induce or will not continue to induce, a long term population decline.

151 IV. A.1.a, pg. 47.

There are no references on compensatory processes. Statements presented as facts must be documented. At present they are not.

146 We do not agree. We firmly believe that enforcement of regulations curtailed the roadside feeding of bears and that consequently the bears moved away from the roads and are not as readily seen by visitors.

147 The text has been amended. See page 42.

148 We agree that the Interagency Study Team is not infallible. See responses 96 and 99.

149 The text has been revised and includes documentation. See pages 45-46. Also see response 144.

150 The text has been revised. See pages 45-46.

151 The text has been revised and documentation provided. See pages 45-46.

References which appear in text but not in bibliography:

1. Craighead et al. 1974
2. 1980 U.S.F.W.S. Draft Grizzly Bear Recovery Plan
3. Cole 1971
4. Cole 1972
5. Cahn 1968
6. Dean 1972
7. Moment 1970
8. Jonkel 1967
9. Knight 1981
10. Wright and Thompson 1934

152

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Gilbert, W. 1976. The great Grizzly controversy. Audubon 78(1): 15 pp.

152 Differences between text and bibliography have been reconciled in the final EIS.

Griffel, D. 1978. Bear-livestock interaction study. Unpubl. For. Serv. Prog. Rep. Targhee Nat'l For. 40 pp. Mimeo.

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Roop, L.J. 1980. The Yellowstone grizzly bear: a review of past and present population estimates. In Yellowstone grizzly bear investigations. Annual report of the Interagency Study Team. 1978-79. USDI-NPS. Misc. Rep. No. 11. 91 pp.

Stringum, S.F. 1980. Role of adult males in grizzly population biology. Paper presented at 5th Int. Conf. on Bear Res. and Manage.

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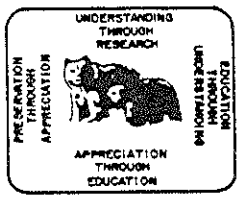

Bear Biology Association

January 22, 1982

Mr. Bob Kasparek
Environmental Protection Specialist
Rocky Mountain Regional Office
P.O. Box 25287
Denver, CO 80225

Dear Mr. Kasparek:

The Bear Biology Association appreciates the opportunity to review and comment on the revised draft environmental impact statement for the grizzly bear management program. The following comments are offered for your consideration.

M-90

153 Page 2; Alternative A: The BBA believes that Alternative A represents the best choice of Alternatives presented in the DEIS. There appears to be some confusion, however, about the name of the present management program. Paragraph one refers to the "grizzly bear management program", yet it is called the "Yellowstone Bear Management Policy" in paragraph four. Paragraph four also states that the management program applies to "both black and grizzly bears", yet no specific guidelines are described in the document for black bears and the relationship between black bears and their nutritional needs have not been addressed at all.

154 Page 2; element #2. Education and Enforcement: The information and education effort should include popular magazine articles reporting the results of the Interagency's research finding in addition to the "warning" literature and bear "talks" given by Park personnel. These articles have the potential to emphasize the positive aspects of bear biology and present a more balanced perspective of bear ecology than the warning literature.

155 Page 5; paragraph 3: The procedure that will be used to break up bear jams is vague and should be documented in greater detail. Will all efforts be directed at visitors or will the Park also use techniques designed to discourage the bears from frequenting the roadsides (i.e. Taser gun)?

156 Page 6, paragraph 3: "Unnaturally agressive" is an ambiguous term that should be defined more specifically considering the long term implications of removing some bears from the population.

153 The text on page 2 has been revised to clarify the program. The park's policy on bears does cover both species, but the EIS necessarily deals with the grizzly bear because of its threatened status.

154 The Interagency Study Team data is available for publication in popular articles. However, we not believe it is a proper role for the National Park Service to distribute such popular articles since the articles are available for sale to the general public.

155 The paragraph has been deleted. The park has not had a roadside beggar black bear since 1977.

156 See response 32.

157 Page 6; Paragraph 8: All captured bears should be marked with a lip tattoo in addition or in lieu of ear tags. Tattoos provide a permanent mark whereas ear tags are occasionally lost.

158 Page 10; paragraph 2: The statement that "locally resident bears make up the bulk of man-caused bear mortalities outside the park" is not a responsible conclusion based on the information presented and may not be true. The NPS has no data to support the contention that these unmarked bears did not venture inside the Park.

159 Page 15; paragraph 7: This statement is simply and emphatically not true and should be removed from the document.

160 Page 16; element B, No action: Cowan (1974) is cited to support the statement that "the relatively sudden closure of the dumps has not severely impaired the integrity of the park's present grizzly bear population". The Interagency Grizzly Bear Study Team's 1980 progress report suggests that this is not the case (Knight 1980).

161 Page 21; paragraph 2: The statement that food is not a limiting factor for the grizzly population can not be supported by available data. You've cited Knight et al. 1977 in response to Cowan's (page 71) criticism of this statement, and in doing so, you've missed the point. Knight et al. (1977) state there was no "food shortage"; they said nothing about food quality. If you'll check with Dr. Knight, I'm sure you'll find that Dr. Cowan's original criticism of the statement is still valid and we would encourage you to remove it from the document.

162 Page 31; paragraph 3: The comment that "it is probable that the grizzly bear population is the study area is growing or at least stable" is outdated. We recommend that you contact Dr. Knight for a current evaluation of the trend of the grizzly bear population.

Thank you for the opportunity to review and comment on this document.

Sincerely,

John Beecham

John Beecham, PhD
President, Bear Biology Association

157 We do not agree. The ear tag has been adequate for management purposes. See response 128.

158 See response 135.

159 We do not agree. The park has at least two instances on record where visitors inadvertently got involved with bears that were being trapped or drugged.

160 The paragraph has been deleted. Also see pages 45-46.

161 See response 11.

162 The text is revised to include the most current research data. See page 28.

As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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