

Denali National Park and Preserve

Bear-Human Conflict Management Plan



Revised June 2003
The Wildlife Team, Denali National Park and Preserve
Center for Resources, Science, and Learning

Superintendent
Denali National Park and Preserve
P.O. Box 9
Denali Park, Alaska 99755



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BEAR-HUMAN CONFLICT MANAGEMENT PLAN

ACKNOWLEDGEMENTS

Most of the elements in this plan were originally developed by John Dalle-Molle and Joe Van Horn, with input from Frank Singer, when the original Bear human conflict Management plan was developed and implemented in 1982. Since then many dedicated Wildlife Management Technicians have contributed to implementing this plan. Several people have worked on writing and updating this plan over the years including Ken Stahlnecker, Gordon Olson, Dave Schirokauer, Hilary Boyd, Pat Owen, Ed Vorisek, Jason Ransom and Kahlil Wilson. The success of this program is the result of all the employees of Denali National Park and Preserve being committed to minimizing Bear-human conflict.

INTRODUCTION

Denali National Park and Preserve currently receives over 600,000 person days of visitor use per year in an area with grizzly bear (*Ursus arctos*) densities as high as 32 bears/1000km² (Dean 1987, Keay unpublished data). As visitation to Denali continues to increase, so will the potential for impacts to bear populations. Grizzly bears and black bears (*U. americanus*) are unpredictable animals that can seriously threaten human safety (Herrero 1985, 1989a, 1989b). In Denali National Park, many people have the opportunity to observe grizzly bears in their natural environment. In 1989, 95% of park visitors using the visitor transportation system were able to observe grizzly bears along the park road (Machlis 1990). The park provides a valuable opportunity for the public to foster an appreciation and understanding of bears. This appreciation and public support could enhance efforts to conserve threatened bear populations in other areas.

Visitor use in Denali continues to rise. Consequently, the potential for conflict between bears and people is a major concern. Bear-human conflicts result in loss of wild and free ranging bears and could threaten human safety. Bear behavior and ecology is strongly influenced by the motivation to obtain high energy sources of food. The availability of human foods increases as visitor numbers increase. Availability of human food and garbage at campsites, campgrounds, and other areas of human use may attract both black and grizzly bears. Habituation of bears to people by food rewards is the primary factor associated with bear-human conflicts in national parks (Herrero 1985, Herrero and Fleck 1989). Food-conditioned bears may behave aggressively toward people in order to obtain food. Although no human fatalities have occurred in the park and injuries are few, the number of bear-human incidents and encounters is high. In 1996, over 240 bear-human interactions were reported. Incidents involving property damage are an annual occurrence. The factors affecting bear-human conflicts must be actively managed and the effects of Management actions must be investigated. The continued experimental development and adaptive management implementation of a bear-human conflict management program, by professional biologists and highly trained technicians, is essential to visitor safety and resource protection.

The purpose of the Bear-Human Conflict Management Plan (BMP) is to provide general guidelines that minimize bear-human conflict in Denali National Park and Preserve



(DENA). A detailed project statement addressing bear-human conflict management in DENA can be found in the 1998 Resource Management Plan (Appendix A.).

The goals of the BMP are based on policies of the National Park Service (NPS) and legislation specific to DENA. The goals for bear-human conflict management are to: 1. Provide visitor safety by minimizing bear-human conflicts, 2. Minimize the effects of visitation on the distribution, abundance and behavior of black (*Ursus americanus*) and brown (*Ursus arctos*) bear populations by minimizing bear-human conflicts, 3. Ensure opportunities for visitors to observe, understand, and appreciate black and brown bears, as a part of an intact ecosystem, and 4. Achieve these goals with a minimum of intrusive management actions. The implementation of the Bear-Human Conflict Management Program will follow three courses of action and their corresponding program elements: education, removal of unnatural food sources, and management actions in response to bear-human interactions

It is important to recognize that each bear-human incident may involve unique circumstances for which strict adherence to the procedures outlined in this plan are not appropriate. All the management actions outlined in the BMP emphasize starting with the least manipulative method, relative to the situation. All DENA employees involved in bear management actions must maintain lines of communication with any involved parties throughout the response period and ensure that management actions are documented. A bear's reaction to a particular management action must be documented in the Park's Bear Information Management System (BIMS) database. Analysis of these data will allow park managers and researchers to better understand the effects of management actions such as aversive conditioning.

The BMP will evolve in accordance with continued monitoring and evaluation of policies and programs. The Wildlife Biologist and the Wildlife Management Technicians will evaluate the Bear-human Conflict Management Program annually and document successes or inadequacies. An annual review of the program will include input from other members of the Park staff and bear biologists from other agencies. Reviews will evaluate written and verbal information provided to the public, current data gathering systems, and use of signs. In addition, these reviews will evaluate the Park and surrounding area's garbage and food storage and enforcement procedures. They will also consider staff and budgetary necessities for the implementation of the BMP. Any relevant research findings will be evaluated for incorporation into policy and programs. Efforts will be made to develop, review, and incorporate new or more effective aversive conditioning techniques into the bear-human conflict management program. The Wildlife Biologist and the Wildlife Management Technicians will provide annual summaries or progress reports associated with this review. Implementation of this policy will follow four objectives and their corresponding program elements.

1. Education

DENA personnel will educate park users and employees about bear behavior, ecology, and the causes and avoidance of bear-human conflicts. Education will



reduce these conflicts through improved individual awareness and compliance with regulations.

2. Removal of unnatural food sources

All unnatural food sources will be made inaccessible to bears.

3. Management Actions in Response to Bear-Human Interactions

When preventative methods of deterring bear-human interactions fail, the level of management action taken will be determined by the nature of the conflict.

4. Management Policy Evaluation

The BMP will evolve through annual evaluations of the entire program.

Note: The reader's understanding of this document may be enhanced by looking at the definitions in the glossary. Some of the terminology used below has unique definition when used in the context of this plan.

DENALI NATIONAL PARK AND PRESERVE' S MANAGEMENT POLICY

Preventative management will be the first step toward minimizing bear-human conflicts. Efforts will be focused on identifying and addressing the causes of bear-human conflicts. Park-wide management and education of visitors, businesses, and employees will minimize situations that could precipitate a bear-human conflict.

In circumstances where bears present a threat to visitors despite preventative measures, visitors will be restricted or removed from the area. If this procedure does not resolve the problem, more manipulative management actions such as aversive conditioning, relocation and removal will be initiated.

Bear behavior during bear-human conflicts will be classified as either defensive or threatening. Defensive behavior is considered natural with management responses directed toward the control of human activities. Threatening behavior is considered unacceptable and management responses will be directed towards modifying the bear's behavior. Removal of the bear will be considered as a last resort.

CONTENT OF EDUCATION PROGRAM

Educational efforts will emphasize bear behavior along with techniques for minimizing conflicts with bears. Discussions will also emphasize the importance of the wilderness character of DENA to its natural bear population. Appendix B contains copies of written educational materials available in 2003.



Information Distribution for User Groups

Alpenglow

Printed information for distribution to park users and employees will be centralized in a comprehensive article in the Denali Alpenglow. This article will discuss proper camping and hiking practices in bear country and how to behave should a close encounter with a bear occur. The Assistant Superintendent of Resources, Science, and Learning will approve future revisions of the article.

Park and concession staff will distribute the Alpenglow. Visitors will receive this information at the Visitor Center (VC) and the Science and Learning Center. Copies of the Alpenglow will be available at the following locations:

- Inside the VC and Science and Learning Center. After hours copies will be available outside of both facilities.
- The lobby of Park Headquarters and after hours outside the main door of Headquarters.
- The lobby of the Communications Center.
- The Savage Check Station.
- The concession employee cafeteria at the beginning of each season.
- Eielson Visitor Center.
- The Denali National Park and Preserve Official Web site.
- Copies will be mailed to individuals on request.

The Headquarters Receptionist will maintain copies of the Alpenglow at Headquarters. Concessions staff will get copies to the employee cafeteria. The Interpretive Division will maintain copies at all other sites.

Copies of the Alpenglow will be kept in patrol, wildlife management, and interpretive vehicles for distribution.

Bear Encounters Brochure

The brochure will be available at the VC Information desk, the campground ticket counter in the VC, Savage Check Station, Eielson Visitor Center and at each of the Kantishna lodges. One copy of each translation will be provided to park road bus drivers for reference in their information packets. Patrol Rangers will also have copies of these brochures in their vehicles. This information will be made available in a brochure about bear-human interactions with translations in German, Japanese, French, and Spanish.



Bulletin Boards

Information about safety in bear country, directions to bear proof storage facilities in campgrounds, and proper food and garbage handling procedures will be included in bulletin board displays. Information will be displayed as soon as areas open for the season. The Interpretive Division is responsible for posting of displays and their maintenance throughout the season. It may be necessary to post emergency messages relating to bears. The Wildlife Biologist should be informed in these instances. Copies of all signs and notices are shown in Appendix B.

Signs Explaining Food Storage Regulations and Closures

Signs reminding campers about proper food and garbage handling practices will be affixed to all campground picnic tables. The Wildlife Management Technicians will be responsible for ordering, installing, and replacing all wildlife related signs.

Signs will be posted at all trailheads in the Riley Creek, VC, Science and Learning Center, Headquarters area and at Savage Campground, from approximately 20 May to 20 June, warning the public that bears may be in the area hunting moose calves. Maps of sign locations will be made each season to facilitate removal.

'Keep Wildlife Wild' signs with general rules about not feeding or approaching wildlife will be posted on all garbage receptacles, in restrooms, and other appropriate locations.

Interpretive Activities

The Wildlife Management Technicians and other wildlife staff will provide training sessions for the interpretive staff on bear behavior and ecology at the beginning of each season. All public programs will include a message about the potential for bear-human conflict while visiting DENA and personal practices that can minimize conflict potential. Introductory remarks at guided walks will include the group's actions should they encounter a bear. Interpreters will emphasize proper food and garbage handling during all patrols through campgrounds. The Chief of Interpretation will assure that this information is conveyed to the public during these contacts.

If a bear-related closure prevents an interpreter from conducting a scheduled program, a few minutes will be spent discussing the closure and ways to minimize bear-human conflicts.

Information for Campground Users

When campers receive a permit they will be given a copy of the Alpenglow and directed to the section dealing with bear human safety. They will be informed not to leave food or garbage unattended at any time and that their food should be stored in cars or food lockers when unattended. Park staff should always be alert for improperly stored food. Unattended food will be moved to the food storage lockers. Unattended garbage will be disposed of appropriately. Park staff will inform the Wildlife Technicians or a Patrol Ranger of food



storage problems. Campers without vehicles will be informed of the location of bear proof lockers in the campgrounds. Protection Rangers and/or the Wildlife Management Technicians will give verbal warnings about food/garbage storage at the campgrounds when a specific campground is having bear problems. Commissioned Rangers may issue citations when necessary or appropriate.

Information for Backcountry Users

All parties obtaining a backcountry permit will receive verbal, written, and video information about food storage and traveling in bear habitat. A slide program about hiking and camping in bear country will be available at the VC backcountry desk area for visitors speaking French, German, or Japanese. The Backcountry Desk Rangers will distribute bear resistant food containers (BRFCs) to backpackers. The visitor signature on the back of the permit will document personal contact with a Backcountry Desk Ranger. A copy of this permit can be found in Appendix C. The Backcountry Sub-District Ranger is responsible for this program element.

Information for other Park Users and Neighbors

Other park users including subsistence users, mining operators, business license holders, concession operations, contractors, holders of special use permits, private land owners within DENA, and adjacent land owners all have the potential to impact the parks wildlife by inappropriate food and garbage handling practices. The Wildlife Management Technicians and/or Rangers will inform these groups of the Park's policy regarding bear-human conflicts. Emphasis will be placed on the methods and advantages of preventative measures.

These groups/individuals will be encouraged to bear-proof their garbage and food handling systems. Appropriate State and Federal laws will be enforced in cooperation with the State. Specific language of all relevant regulations can be found in Appendix D.

Information and requirements for bear proof food and garbage handling will be included in all permits, licenses, contracts, and plans of operations issued to these groups. A notice discussing these points as well as relevant bear activity updates will be maintained in public places such as the Denali Park Post Office and mailed to more inaccessible individuals and communities. Cooperative efforts of Park employees from all divisions will ensure the inclusion of these requirements in appropriate agreements. For specific individual responsibilities see Appendix E.

TRAINING

NPS Employees-General

All NPS employees will attend a training session concerning bear-human conflict that is part of the annual general orientation provided every May. Other bear safety training sessions will be available for employees who are unable to attend the general orientation. The session will cover the information presented in the Alpenglow article as well as information



necessary for living, working, and recreating in bear country. It will also emphasize the importance of minimizing bear-human conflicts within the Park. The Wildlife Management Technicians are responsible for arranging and presenting these training sessions. **It is the responsibility of supervisors to ensure time is provided for their employees to attend.**

It is the responsibility of each employee to be alert for situations such as broken garbage storage equipment, poor food storage, bears around developed areas, and other problems that could lead to bear-human conflicts. These problems must be reported immediately to a Wildlife Management Technician either directly or through the Comm. Center. Employees who have infrequent contacts with the public will be instructed at minimum to direct visitors to the Alpenglow, bulletin boards, Visitor Centers, or Ranger Activities and Interpretive staff when questioned about bears. It is also the responsibility of all employees to place people who have been involved in a bear encounter and/or incident (see the glossary for definitions) in contact with the Wildlife Management Technicians.

NPS, and Contracted Employees with Visitor Contact Duties

The Interpretive, Dispatch, Ranger, and Concession staff that frequently engage in visitor contact will receive additional training on reporting procedures for bear-human interactions, interpreting the park's bear-human conflict policies and programs to visitors, and basic bear biology and behavior. The Chief Ranger, Chief of Interpretation, and Chief of Concessions will ensure that this training is incorporated into annual employee orientation and training sessions. The Wildlife Management Technicians will conduct these sessions.

NPS Employees Responding to Bear-Human Incidents

Wildlife Management Technicians responsible for responding to bear-human incidents will receive intensive training in reporting and interview procedures, incident scene investigation, incident response scenarios and procedures, temporary and emergency wildlife closure procedures, firearms handling, and use of deterrent and aversive conditioning devices. The Wildlife Biologist and/or returning Wildlife Management Technicians will provide this training.

Researchers and Contractors

All researchers and contractors working in DENA will be required to obtain training in bear-human conflict avoidance and information necessary for living and working in bear country. Training sessions will be tailored to the experience level of the group and their potential exposure to bears. The Wildlife Management Technicians will present these sessions. The Park liaison to each of these groups will ensure that the necessary training is arranged. Researchers must sign written bear safety precautions and guidelines when their research permit is issued (Appendix P).

Concession Employees

All concession employees will be provided with information about living, working and recreating in bear country. Informational meetings will be held at various times to cover the



information presented in the Alpenglow. These meetings will also include requests for employee reports concerning bear interactions and situations throughout the park that could result in bear-human conflicts. The Park will emphasize that individual actions, such as proper use of food storage and garbage disposal systems, can make a difference in preventing conflicts with bears.

The Alpenglow article and a memo summarizing the topics covered in these meetings will be posted at the employees' cafeteria, Visitor Transportation System (VTS) bus office and other concessions that desire to participate. The Wildlife Management Technicians will arrange and conduct these meetings.

Bus Drivers

Annual bus driver training will cover the driver's responsibility to minimize bear-human conflicts. Drivers will be instructed to use the Alpenglow article as the basis for any bear information given to the public. Any bear related closures should also be included in their initial message to the public. Bus drivers will be reminded that visitors are not allowed to leave a bus within ½ mile of a bear. Drivers should direct people involved in an interaction with a bear(s) to the Wildlife Management Technicians, Law enforcement Rangers, or NPS staff at the Visitor Center. The Visitor Transportation System Coordinator will arrange these training sessions that are conducted by the Wildlife Management Technicians.

Documentation

All training sessions will be documented and reported in the Annual Wildlife Management Report in order to monitor the time invested, number of people and groups receiving training, and effectiveness of the training.

REMOVAL OF UNNATURAL FOOD SOURCES

Regulations

NPS Food Handling Regulations

Title 36 of the Code of Federal Regulations (CFR) 2.10(d) is the primary regulation authorizing the Superintendent to specify food-handling requirements within DENA (Appendix D).

State Regulations and Their Interpretation

Upon receipt of a complaint concerning a problem bear, Alaska department of Fish and Game (ADF&G) generally requires the food and garbage of the residence, camp, or business be completely bear proof before any action is taken (Appendix D). In areas with a history of bear problems, an inspection of food and garbage handling of area residents can be conducted by an ADF&G representative if a complaint is received from a neighbor. The State's definition of "bear proof" is based on the proven effectiveness or ineffectiveness of



the system and not specific construction guidelines. If a bear is obtaining food or garbage, the current system is not "bear proof" and must be modified.

Businesses and other public operations must be inspected and obtain permits from the Alaska Division of Environmental Health as required by 18 AAC Chapter 60 (Appendix D). This regulation requires garbage to be handled in a manner that is not attracting or accessible to animals. Heavy, securely covered containers are required in areas where bear problems have occurred. This regulation provides only limited guidelines for defining what is bear proof. However, if problems occur, the storage practice must be changed or the permit can be revoked and fines levied.

NPS and Concessions Operations

Food and Garbage Handling by Visitors

The bear proof food lockers located in all campgrounds, along with other methods described in 36 CFR 2.10(d), are approved food storage methods. Campground users must store all unattended food in bear proof food lockers or hard sided vehicles.

All backcountry users will store food in BRFCs when overnight hiking in all backcountry units except 22 and 23, where their use is impractical. More details can be found in Appendix F.

NPS and Concessions Waste Disposal Facilities and Procedures

All National Park Service and concession outdoor waste disposal systems must be bear proof. The concessionaire's contract requires the use of bear proof food and garbage handling procedures. The Concession Division staff will ensure compliance with this contract and ensure that the concessionaire provides, uses, and maintains bear proof systems at the food court, employee cafeteria, and employee residential area. The concessionaire is required to instruct employees to keep dumpsters and recycle containers covered and fastened closed at all times except when garbage and recyclable waste are actually being placed in the containers. There can be no garbage or recyclable waste stacked by the containers at any time. Excess garbage and recyclable waste must be securely bagged and stored inside a closed, hard-sided building until space in the containers is available.

All contract reviewers will ensure bear-proof food storage, preparation, and garbage handling requirements are included in any contracts and that these requirements are followed by the contractor.

All trash containers which are not bear proof, whether located at employee residences, offices, food services, stores, or other facilities will be kept indoors. Ranger staff and Wildlife Management Technicians will enforce waste disposal regulations.

The Chief of Maintenance will ensure that DENA's waste disposal systems are bear-proof and maintained. From 15 May - 15 September, refuse containers in visitor use areas will be



checked daily, and emptied when half full or sooner if there is a strong odor present. Plastic liners will be used in all garbage cans and containers will be cleaned as needed. Containers at C-Camp and the permanent housing area will be checked and emptied in the same manner three times per week. Employees collecting garbage will report any repairs that are necessary to maintain containers in a bear proof condition. It is the responsibility of the Buildings and Utilities Supervisor to see that these situations are immediately corrected. The Buildings and Utilities Supervisor will ensure that all garbage collection vehicles in which garbage is stored overnight will be bear proof or parked inside.

In Talkeetna, the Ranger staff will maintain bear resistant garbage receptacles, and acquire new ones when necessary, at the Mountaineering Contact Station and NPS housing area. The local contractor, Talkeetna Refuse, collects trash.

All remote seasonal work camps will maintain wildlife resistant food and garbage storage facilities. The camp-lead is responsible for acquiring, maintaining, and insuring the use of these storage facilities. The Wildlife Management Technicians will insure the camp manager has the appropriate resources and understand the importance of using them correctly. The Wildlife Biologist will also provide an electric fence for remote work camps when requested or if and when the bear situation warrants it.

The park's waste transfer area, east of Highway #3 at milepost 234, will be maintained in a bear proof manner. The chain link fence surrounding the compound will be maintained in a condition that prevents entry by bears. The main entrance gate will be fastened shut at all times, and the doors on the transfer chute will be closed. The Buildings and Utilities Supervisor will maintain these systems in good working order, immediately repairing any damage or malfunctions. It is the responsibility of anyone using the storage area to report needed repairs to the Buildings and Utilities Supervisor and collect any garbage not in a bear proof container, in the area.

All campgrounds, picnic areas, park roads, residence areas, backcountry units, or other areas of visitor concentrations will be maintained in a litter-free condition. It is the responsibility of the Chief of Maintenance to provide regular litter patrols of frontcountry areas. It is the responsibility of the Chief of Ranger Activities to ensure backcountry areas remain free of litter. It is expected that all DENA employees will contribute to maintaining a litter free environment. The Eielson caretaker will regularly patrol near the Visitor Center, picking up litter in areas frequented by visitors. Cooking grease in cabins and campgrounds will be disposed of in the nearest bear proof garbage cans with plastic liners.

The kennels manager will ensure that dog food is not left outside unattended. Likewise, pet owners in the NPS housing area will not leave food outside for their pets.

Enforcement

The prevention, identification and correction of improper food and garbage handling procedures are a major part of Ranger Activities Division and Wildlife Management Technician's patrols. Campgrounds will be patrolled each evening to inform visitors of proper food and garbage handling procedures. Unattended food or garbage will be disposed



of or impounded and appropriate warnings or citations issued. Unattended food may be placed in the campground's food storage locker and a warning left at the campsite informing the visitor why it was removed and where to recover it.

Rangers are responsible for correcting emergency sanitation problems such as overflowing garbage cans or litter. Rangers will be alert for malfunctioning or poorly maintained bear proof facilities such as garbage can tops that are ajar, storage lockers left open, or dirty garbage cans that are the source of odors.

National Park Service and concession residence areas will be patrolled by Law Enforcement Rangers daily to ensure that food or garbage is not left out on porches or picnic areas. All concession garbage facilities will be checked once during the day and once after 11 p.m. to ensure that dumpster lids are closed and fastened and no garbage or litter is accumulating around the disposal areas. Rangers should be alert for improper disposal of kitchen wastewater and oils around the hotel and employee residence area. East District Ranger staff and the Wildlife Management Technicians will conduct foot patrols of the VC and Science and Learning Center, train station, and Riley Creek area.

The park's waste transfer facility, east of Highway #3 at mile post 234, will be patrolled weekly, to insure that the gate is locked and doors on the garbage transfer chute are closed.

Any non-compliance will be documented and appropriate warnings or citations will be issued. Violations involving the concession operation will be reported to the Concession Specialist for immediate correction. Non-compliance with NPS operations will be routed through the Assistant Superintendent of Resources, Science, and Learning to the responsible division or supervisor for immediate correction.

Mining Operations

Mining Permits for claims within DENA require that all garbage and refuse be removed from the claim area or burned daily. The Wonder Lake Rangers and the Wildlife Management Technicians, under current CFR regulations, will enforce the policy of bear proof food storage and garbage handling. State regulations are used in the area of the New Park and Preserve. These regulations, however, must be enforced by the State because the NPS has only proprietary jurisdiction over New Park and Preserve lands.

Storage of food and garbage on claims must be in securely covered steel or heavy wood containers, an elevated cache or inside a closed, hard-sided building. Enforcement of State and Federal regulations will ensure proper food and garbage handling practices on claims. State assistance with enforcement will be requested, if appropriate.

Unpatented mining claims within DENA will be inspected opportunistically during the summer for food and garbage handling practices. Improperly stored, or unattended food and garbage will be removed and disposed of by Wildlife Management Technicians or Wonder Lake Rangers.



Business License Holders, Special Use Permits, and Concession Contracts

State regulations require bear proof handling of food and garbage by these user groups. All garbage generated by these users must be removed from DENA. The Concession Specialist, District Rangers and Wildlife Management Technicians will work to change unacceptable practices through education, warnings and enforcement of appropriate regulations.

Private Land within New Park and Preserve or Close Neighbors

National Park Service does not have jurisdiction over food and garbage handling practices outside the boundaries of the Park. Efforts to create safe environments for both bears and humans in neighboring communities will be pursued through cooperative arrangements with groups like the Denali Foundation, which runs the Bear Essentials program. Wildlife Management Technicians will offer advise to local businesses and residents regarding food and garbage handling practices whenever possible.

Providing education and requesting assistance from State officials are the only methods of assuring compliance on private lands. Rangers and Wildlife Management Technicians will check for problems on these properties to the extent they are permitted access. State officers will be contacted if necessary improvements in food and garbage handling cannot be made through friendly agreements and education. If necessary the Wildlife Biologist and Chief Ranger will contact the Department of Environmental Conservation to determine if local businesses are in possession of appropriate permits under and/or is in compliance with Alaska Sate Regulations 18 AAC 60. The text of this State Statue is available at (<http://www.state.ak.us/local/akpages/ENV.CONSERV/title18/title18.htm#60>) or in appendix D. **18 AAC 60.010** states “(a) A person may not store accumulated solid waste in a manner that causes (1) a litter violation under 18 AAC 64.015, (2) the attraction or access of domestic animals, wildlife, or disease vectors”.

Subsistence Users

The sanitation conditions around subsistence users' cabins and camps in DENA are controlled by the CFR and State regulations discussed previously (Appendix D). All contacts with these users will emphasize the need for bear proof storage of food and garbage. Whenever possible, Rangers will check cabins and camps for conditions that may attract bears.

Permit stipulations, outlining approved methods of bear proof handling of food and garbage and its removal, will be used to manage the activities of subsistence users. Notification of the intent to enforce regulations will be maintained in public places such as the Denali Park Post Office and mailed to more inaccessible individuals and communities. The Wildlife Biologist, Wildlife Management Technicians, and Subsistence Specialist are responsible for the distribution of this information.

MANAGEMENT ACTIONS: RESPONSE TO BEAR-HUMAN INTERACTIONS



This program element is organized into four sections: 1. Reporting Procedures, 2. Criteria for Determining Bear Behavior, 3. Management Actions, and 4. Field Guidelines

The procedures outlined in this section are intended to provide guidance only. It is recognized that each bear-human incident may involve unique circumstances for which strict adherence to the procedures outlined in this plan is not appropriate. It is important for those involved in management actions to maintain dialog throughout the response period and ensure that management actions are documented.

Reporting Procedures

Receiving Initial Reports

It is the responsibility of all NPS employees, bus drivers, and concession employees to direct people who have had an interaction with a bear to Interpretation, Law Enforcement, or Center for Resources, Science, and Learning staff. Staff should follow interviewing guidelines and fill out a BIMS form as described in Appendix G. The Communications Center should be notified if the bear-human interaction requires further action. Wildlife Management Technicians or Ranger staff will conduct further interviews and investigations.

Notification

The person receiving the initial report will notify other parties based on the following guidelines once the general type of report is determined.

- (A) General Observation
 - Route BIMS form to Wildlife Management Technicians (Appendix G).
- (B) Bear within close proximity of developed area and other serious situations
 - Inform other staff or visitor center staff if in area of VC.
 - Inform visitors or residents in the area.
 - Inform Communication Center.
 - Inform Wildlife Management Technicians
 - Route BIMS forms to District Ranger and Wildlife Management Technicians (Appendix G).
- (C) If the incident requires an immediate action, the Communication Center will inform District Ranger, Supervisory Wildlife Biologist, Wildlife Management Technicians, Chief Ranger, and the Assistant Superintendent of Resources, Science, and Learning and the Superintendent's Office.



Documentation

See Appendix G for forms and use guidelines necessary for documenting interactions, management actions, and biological information.

Criteria for Determining Management Actions

The procedures outlined in this section are intended to provide guidance only.

Definitions of acceptable and unacceptable bear behavior can be found in the glossary and are summarized in the table below. These management actions emphasize the use of the least manipulative method first. Every situation is likely to be different, and there is no one size fits all solution to complex wildlife behavior management. The bear’s reaction to a particular management action must be documented.

| Behavior Category | Human-Bear Interactions | Management Response |
|-------------------|---|---|
| FORAGING | | |
| Mistaken Prey | Human behaving like bear prey, or bear attacks in brush. | None |
| DEFENSIVE | | |
| Intolerant | Bear leaves the area as soon as it becomes aware of people. | None |
| Dominance | Bear challenges intruder of its personal space by approaching, charging or body language displays. | None |
| Surprise | Close, unexpected encounter; bear reacts, then leaves once person is no longer considered a threat. | None |
| Provoked | Person intentionally approaches close or harasses bear. Bear responds then leaves immediately. | None |
| HABITUATED | | |
| Curious | Bear shows inquisitiveness one time to identify a scent or object, then moves away. | None |
| Tolerant | Bears in areas also used by people; tolerates people nearby but ignores them and their facilities. | Monitor |
| Conditioned | Repeat interest in people or their facilities; if allowed to continue, likely to result in obtaining unnatural food or reoccurring approaches towards people or facilities. | Aversive Condition Relocate Remove |
| Rewarded | Bear has obtained unnatural foods. | Aversive Condition Relocate Remove |
| AGGRESSIVE | | |
| Threat | Made repeated offensive charges or caused injury. | Destroy |
| Predation | Kills and/or consumes victim. | Destroy |



Management Actions

1. Investigation

Any field action will be preceded by an interview with the people involved. The interview should follow questions outlined in the BIMS form and interview guidelines in Appendix G, emphasizing a detailed account of physical setting, location and actions/reactions. If the bear is still in the area, the investigator should try to identify the bear. If it appears that further management actions will be needed, the bear should be kept in view, without provoking further interactions, until the Wildlife Management Technicians arrive.

2. Response Procedures

A quick response, within 12 hours, is essential to the success of management actions. Overall effectiveness will likely increase if the initial team responding to the situation is capable of performing the full range of management options and is prepared to stay in the area for several days.

The preferred team is composed of two Wildlife Management Technicians, a third member of the resource preservation staff, or a Law Enforcement Ranger. Members of this team **must** be qualified with a shotgun. A person qualified in wildlife immobilization may also be needed. The team will be equipped to perform a full range of management actions including immobilization, marking, aversive conditioning, and a camp test (tests the bears behavior before/after aversive conditioning).

Response to a backcountry incident:

- 1) Initial report and interview taken by field staff.
- 2) Field staff contacts Communication Center.
- 3) Communication Center contacts Wildlife Technicians.
- 4) Meeting point arranged for team and helicopter, if available.
- 5) Team members get gear and proceed to pick up point.
- 6) Consider fixed-wing aircraft support to help search incident area.
- 7) If possible one team member interviews victim. Consider taking victim to site if further clarification is needed.
- 8) Team goes to site and conducts preliminary search of area with aerial support if available and necessary.
- 9) If necessary, remove victim's equipment from the area.



The team will take the appropriate actions outlined under Field Guidelines section of this document and will be prepared to spend at least two days in the area.

Driving a bear away from a populated area:

- (1) Survey the area. Determine the number and age classes of bears involved.
- (2) Keep visitors out of the area and in a safe location.
- (3) If the bear(s) has not left the area, use the least disruptive techniques first. Make sure the bear has an escape route. Yelling, waving arms, or throwing rocks from a distance is generally sufficient. Give the bear time to react and proceed slowly. The objective is to remove the bear from the area and not cause a confrontation that might result in a charge.
- (4) If these techniques fail after repeated attempts, an NPS employee who has completed all necessary firearm and aversive round training may use cracker rounds or other non-lethal rounds to attempt to drive the bear away from the immediate area. Continued hazing of the bear after it leaves the area is not warranted.

An alternative team led by an individual experienced in investigating bear incidents will go to the site if a preferred team is not available. The primary objective for this team is to retrieve any abandoned equipment and complete the initial phase of the investigation. This team may take no other management actions. A qualified individual may carry a shotgun.

3. Monitoring

Controlling problems with passive, preventative actions is the first step in any management action. This option must be exhausted before more aggressive management actions are taken. Monitoring a situation requires at least one employee remain on the scene until the situation is resolved.

When monitoring a situation:

- (1) Determine the number of bears, age of bears, location of people, bear behavior, and direction of their travel.
- (2) Inform people in the affected area of the situation.
- (3) Continually patrol the area and remove easily obtainable sources of human food. Check visitor food storage for loose garbage or open garbage cans.



- (4) Control movements of people and keep them away from the bear(s). Give them a ride past the bear or get them into a visitor center or back in buses or cars.
- (5) Keep the bear in view, especially if further management action may be required.

4. Closures

Specific procedures for establishing a temporary or emergency closure are given in Appendix H.

The establishment of a closure enables the removal of people from a potentially hazardous situation such as a carcass, berry patch, or the area of a recent incident. Closures may also allow a bear a chance to move to a remote part of the park before it has a second opportunity to come in contact with people.

In the backcountry, boundaries for closures will usually be the boundaries of the backcountry unit where the incident occurred. The adjacent unit should be closed if the incident occurred on or near the unit boundary. Boundaries may also be constructed to encompass only the hazardous area and the common access points. Initial and subsequent patrols of closures are required in order to remove people from the area, to prevent entry by other visitors, and to determine if the closure is still required.

Criteria for establishing and opening closures are provided under Field Guidelines (pg. 25). The duration and type of closure is dependent on the circumstance that caused it and the effectiveness of management actions. Certain circumstances may only warrant a partial closure as long as it minimizes further bear-human interactions.

5. Patrols, Tests and Subsequent Management Actions

(1) Patrols to Clear and Enforce Closures

Rangers will conduct patrols to remove people from a newly established closure and to prevent entry into the area.

(2) Patrols to Identify Bears with Unacceptable Behavior Patterns

Patrols will be conducted in response to specific incidents. The decision to initiate a patrol will be made by the Wildlife Biologist and the Wildlife Management Technicians. They will be conducted by the Wildlife Management Technicians and can include another qualified individual.



The purpose of patrols will be to determine the behavior patterns of potential problem bears. Behavior patterns observed during a patrol will determine the appropriate management action.

The team may make decisions in the field based on information they collect and the general guidelines in this plan. Management actions should be conducted in controlled areas and with close crowd control where appropriate. Explanations of the management actions being conducted should be provided to park visitors if personnel are available. When possible, the Wildlife Management Technicians should contact the Wildlife Biologist before more extensive or aggressive management actions are taken.

A bear's behavior may be classified as **conditioned** if it returns after two attempts to scare it off during a test. Further evidence can include an obvious interest and familiarity with unnatural food sources. If there is uncertainty, the animal should be classified as **tolerant** until more tests clarify the animal's behavior. If a Bear demonstrates **threatening** behavior, immediate actions should be taken as outlined in the Field Guidelines.

Specific Management Procedures:

1) Bears frequenting developed areas:

The incident area will be patrolled frequently by both Wildlife Management Technicians and Law enforcement Rangers, with patrols concentrated during the same time frames each day that the bear was observed. Personnel who are not qualified to take further management actions such as marking, aversive conditioning, or capture, may be used to monitor situations or on patrols. They will keep any bear in sight that exhibits the behavior of the animal involved in the incident. Their responsibility is to monitor the situation, and notify the Communication Center or the Wildlife Management Technicians so more qualified personnel can respond. Prior to and during these patrols, the area should be checked and cleared of unsecured, anthropogenic food so that any bear that enters the area will not obtain rewards. No food or garbage will be used as bait. Bears entering the area will be monitored. This procedure is useful in the identification of conditioned behavior.

2) Bears demonstrating food conditioning to backcountry camps.

Wildlife Management Technicians will set up a camp in the area where the incident occurred as soon as possible (within 12 hours of the incident). Typical behavior of a camping party will be followed; preparing meals at typical times, using standard backpacker's food, storing food in sealed plastic bags in BRFCs, etc. However, they will remain in their tent as much as possible, especially if there is a bear near the area. If possible, a third person at a vantage point will maintain radio contact with people in



the tent while watching for approaching bears. Bears entering the area will be monitored. The camp should be maintained for two to five days depending on the bear's response. If a bear, exhibiting the type of behavior described during the incident is observed, appropriate procedures will be taken, as outlined in Field Guidelines.

3) *Bears that approach, threaten or follow people:*

Wildlife Management Technicians will enter the area and approach bear(s) until the bears are definitely aware of the team. The team should maintain a safe distance from the bear. The team's objective is to determine if threatening behavior is present, without eliciting a normal defense or dominance-related reaction. Approaches of less than 50 meters should not be necessary in backcountry situations. Closer approaches may be necessary in the frontcountry. The team will remain in an identifiable position for ten minutes. No actions will be taken if the bear shows no reaction or it moves off. If approached by the bear the team will attempt to mark the animal. The marked bear can then be subjected to aversive conditioning trials and further management action as outlined below and in the Field Guidelines section of this document.

In frontcountry situations the team will try to scare the bear out of the area by yelling and throwing rocks. The team will also attempt to scare the bear away from any anthropogenic food sources using the same techniques. Cracker shells and rubber slugs will not be used in frontcountry settings unless the area is clear of people.

Typically, at least two attempts to scare the bear away will be made before categorizing the bear's behavior. If the bear persists in approaching, following, or remaining in the area, further action may be taken as outlined below and in the Field Guidelines.

The team cannot use bait of any kind.

6. Firearm Use for Management Actions

12 gauge shotguns with slugs will be the primary back-up weapons for any marking, capture, aversive conditioning, or destruction actions. The individual with the capture gun may also carry a large caliber pistol (.44 or larger). Only employees who have participated in a park approved firearms training session, conducted by a certified firearms instructor, which specifically covers the use of firearms in wildlife management situations (Appendix I), may participate in these operations. The Wildlife Biologist will select individuals for this training as needed.

Team members will discuss backup procedures prior to all management action. Situations will vary, but generally the first three rounds loaded into the shotgun magazine (they will be the last three fired) should be lead slugs. The last two



rounds loaded, one in the magazine and one in the chamber, will depend on the type of action planned. One or both could be plastic slugs or cracker rounds for aversive conditioning, or slugs for strictly back-up situations.

7. Marking

Bears may be marked as part of approved research projects or resource management actions. At the present time only bears selected for aversive conditioning management or relocation will be marked for management purposes. The selection of the animals and how they will be marked will be made by the Supervisory Wildlife Biologist based on the Field Guidelines of this plan. Only animals with a demonstrated history of unacceptable behavior will be marked for management purposes.

Radio collaring, and ear tagging are the preferred methods for marking and require approval by the Supervisory Wildlife Biologist. Other techniques, such as pit tagging, dye, paint or streamer marking may be approved on a case-by-case basis by the Wildlife Biologist. The individual marking the bear may carry an additional sidearm (.44 Cal minimum) for protection. Team members will also provide shotgun back up. Marking attempts will be terminated if the bear's behavior indicates a high potential for a charge or injury to the bear. Bear capture will follow the protocols outlined in Appendix J.

Any bear that must be handled will have a numbered tag placed in each ear. Management actions involving translocation or aversive conditioning require radio collaring for monitoring bear movements, and the effectiveness of aversive conditioning.

8. Immobilization

(1) General Authorizations for Capture Equipment and Immobilizing Drugs.

The use of capture equipment and immobilizing drugs will be restricted to employees with specialized training and experience in animal restraint techniques and equipment, and who have been specifically assigned to bear immobilizing actions (Appendix I). Decisions concerning the individuals receiving this authorization and training will be made by the Supervisory Wildlife Biologist.

(2) Capture and Care.

Bears will be captured or immobilized (Appendix J) only for approved research or resource management actions. At present, management-related immobilization is limited to marking or radio collaring bears for aversive conditioning tests, translocations, removal, or destruction. The decision to capture a bear, and the method of capture will be made by the Assistant



Superintendent of Resources, Science, and Learning and the Wildlife Biologist. The Superintendent is informed in all cases. However, immobilization for removal or eventual destruction requires the approval of the Superintendent.

Bears may be captured by use of drug injecting dart, or culvert or barrel type trap. The dart technique is preferred because it is the most discriminating method. Traps may be used when circumstances indicate a high probability of capturing a specific animal that has an established behavioral pattern. Darting attempts will be terminated when there is a high potential for injury to the animal. Repeated attempts and different strategies will be tried before the immobilization option is completely abandoned, especially for bears which must be destroyed if capture attempts fail. In most cases, dart capture operations will be conducted from the air with the use of a helicopter and support fixed-wing aircraft. In rare circumstances a dart capture may be initiated from the ground. In these cases, aerial support will be provided to monitor bear movements and actions. Ground based darting attempts will be terminated when the bear behavior indicates there is a high potential for a charge.

It is the responsibility of the person leading the capture operation to ensure that all participants are aware of the exact plan of action and their responsibilities for the capture attempt.

Personnel who have been trained on trap use will make all trap sets. Traps will be placed at the edge of developed areas and explicitly signed to warn visitors of them. When possible, traps will be baited with food found naturally in the area. Traps will be set in the evening, when fewer visitors are in the area, and will be locked closed again in the morning. Any trap set will be accompanied by extra patrols by the Wildlife Management Technicians to inform people of the problem in the area and to check food and garbage.

Animals held in traps will be moved to a site away from public use areas. Visits to a captive animal will be restricted to employees specifically designated by the Wildlife Biologist as caretakers for the animal. Bears will not be held longer than 24 hours unless extraordinary circumstances, effecting the translocation or release occur. The Wildlife Biologist and the Wildlife Management Technicians are responsible for the care of animals in these situations. Bears in traps requiring immobilization will be drugged with a blow gun dart or a jab stick/syringe system. Only employees absolutely necessary to this operation will be present. General health and plane of anesthesia of immobilized animals will be monitored. Bears should be kept cool and eyes covered. Whenever practical, one person will stay with the bear during the entire drugging, handling, and translocation process in order to provide continuity in monitoring response to drugs and provide care to the animal. When possible, biological and drug reaction



data will be collected from all animals using a standardized field data form (Appendix B). When possible, the bear will be monitored until it has recovered from a safe vantage point.

The immobilizing agent currently selected for bear management purposes is Telazol, a non-narcotic, non-barbiturate, injectable anesthetic agent. Telazol is a rapid-acting combination of tiletamine and zolazepam. Telazol is mixed with sterile water to form a 250mg/ml solution (Appendix J).

9. Hazing and Aversive Conditioning of Bears

Hazing and aversive conditioning are the primary management actions directed towards bears that display tolerant, conditioned, or rewarded behavior. These techniques range from yelling and waving arms to the use of plastic slugs, cracker shells, or capsicum spray. All use of hazing and aversive conditioning techniques on a bear require complete documentation.

General Procedure:

- a) Assess the situation. Does it warrant action or will it resolve itself acceptably given time and monitoring? How many bears are there? What is their species and age class? Define your objective. Have as many facts as possible before initiating aversive conditioning.
- b) Remove spectators from the area before initiating any actions. Provide interpretation if possible. Always provide the bear an escape route.
- c) Apply techniques in a progressive manner, use the minimum tool that will safely accomplish your objective. In general, yelling, loud noises, and rock throwing, should precede uses of cracker rounds or Capsicum-based sprays. If these techniques fail, rubber or plastic bullets may be used.

The success of cracker rounds, rubber or plastic slugs, beanbag rounds, and capsicum-based sprays may vary with individual bears. The Wildlife Biologist must clear all operations involving these techniques. Only properly trained individuals can use these techniques.

| Aversive Tool | Effective Range |
|----------------------------|------------------------------|
| Pepper Spray | 1 to 5 yards |
| 12 ga Bean Bag | 5 to 20 yards |
| 12 ga Fiocchi Rubber Baton | 15 to 30 yards |
| 12 ga BD-100 Rubber Slug | 20 to 30 yards |
| 12 ga Cracker Shell | Explodes at about 80 yards |
| Shock Collar | Variable up to 300 yards |
| Electric Tent | Animal must contact the tent |



- d) Mark the bear (i.e. paint gun) for positive identification for future management actions.
- e) Interpret reasons for actions to any visitors who view the events.
- f) An electrified tent (E-tent) is a tent covered with electric fence wire. This experimental aversive conditioning tool could be deployed in either the backcountry or the frontcountry when tents are the attractant.
- g) Aversive conditioning must be conducted several times, often over several days. If these attempts fail, management actions may be escalated. In frontcountry situations, managers will consider accelerating the response and bears may be marked and relocated immediately.
- h) Based on the specific incident, the bear may be captured, released on site and aversively conditioned at the capture location.

Limitations and Guidelines for use of Cracker Shells:

- Cracker Shells are not always effective. Bears quickly learn to ignore them after repeated use.
- Their use is limited to open areas.
- Cracker shells traveled 80 yards.
- Be aware of the threat of fire if used in dry forest or brush.
- Place explosive between you and the bear. An explosion behind the animal may scare it towards you.
- Remember there is the potential to injure or kill a bear if they are hit with cracker rounds.

Limitations and Guidelines for use of rubber or plastic bullets:

- There is the potential to injure or kill a bear with a misplaced shot at distances of 35 meters or less for plastic slugs, 10 meters for bean bags. Slug placement in the rump or shoulder area will minimize potential for injury.
- Accuracy and effectiveness diminishes beyond distances of 45 meters for slugs, 30 meters for beanbags.



10. Translocations

Within the Park.

A decision to translocate a bear generally may be warranted if:

- (1) In frontcountry situations, a bear displays rewarded behavior, capture and release on-site has not worked or;
- (2) In backcountry situations, at least three sessions of aversive conditioning have failed to alter a bear's demonstrated, unacceptable behavior or keep it from the area or;
- (3) A bear has possibly been involved in a non-defensive or anthropogenic food related injury or fatality but identification of the animal or behavior is uncertain.

Please note, these are only guidelines. It is recognized that each situation may involve unique circumstances for which strict adherence to the procedures outlined above is not appropriate. It is, therefore, important for those involved in translocating bears to ensure that all management actions are well documented. The decision to translocate an animal will be made by the Superintendent in consultation with the Assistant Superintendent of Resources, Science, and Learning, the Supervisory Wildlife Biologist, the Wildlife Biologist, and the Wildlife Management Technicians.

The Supervisory Wildlife Biologist will be responsible for selecting a release site in the Park or Preserve. Site selection will be based on maximum distance from capture site, areas of human use, acceptable habitat, location of previous translocations, and transport limitations. Family groups of spring cubs or yearlings will be translocated as a unit. Other age classes may be separated. Translocated animals will be radio collared and monitored to determine survival and movements. A helicopter will generally be required to meet translocation criteria. Two translocation attempts will be made before considering destruction.

Outside of the Park.

In most cases, efforts will be made to give a bear, designated for destruction, to a zoo or other approved public use or research facility before it is destroyed. Any facility obtaining a bear from Denali National Park must meet National Zoological Society accreditation standards, be a non-profit institution, have a USDA exhibitor's permit, and, in the case of grizzly bears, hold a permit from the U.S. Fish and Wildlife Service to display grizzlies. See Appendix M for procedures on placing a bear in a zoo or sending bear parts to research facilities.



11. Destruction

On lands within the boundaries of Denali National Park and Preserve, a bear can be killed if it presents a critical and immediate threat to human safety and after all other means of deterrence have been exhausted.

The decision to destroy a bear may be made if it meets the following criteria:

- (1) Attempts of aversive conditioning and translocations have failed. The bear has been translocated twice and has returned, the previous unacceptable behavior pattern still exists, and another home (zoo, research facility etc.) for the bear cannot be found. Or,
- (2) Repeated capture attempts of an animal designated for translocation has been unsuccessful. Or,
- (3) An animal is positively responsible for an injury or fatality resulting from a non-defensive or unprovoked attack. Or,
- (4) An animal has sustained a seemingly fatal, human-caused injury (gunshot, broken bones due to vehicle collision, etc.). And,
- (5) Wildlife Managers, with consensus from the Superintendent, determine that it is in the best interest of the bear(s) and the natural systems involved to forego translocation efforts and another home (zoo, research facility etc.) for the bear cannot be found.

A committee, comprised of the Superintendent, Wildlife Biologist, Assistant Superintendent of Resources, Science, and Learning, Chief Ranger, and individuals invited to the committee by a designated member, will review the records of bears which are candidates for destruction and discuss management alternatives. The committee will ensure the fulfillment of all actions specified in this plan. The Wildlife Biologist will present the committee's recommendations to the Superintendent in writing. If the committee recommends destruction, the Superintendent will be advised verbally as soon as possible, followed by a written recommendation. Except in emergency situations involving a critical and immediate hazard to human safety, the final decision to destroy a bear will be made by the Superintendent.

The destruction of a bear is contingent upon a positive identification of the bear. Sows with cubs will be destroyed if they meet the above criteria. The Wildlife Biologist will decide if spring cubs accompanying the sow will remain in the wild if they cannot be placed in a public zoo or other facility.



Destruction and disposal procedures.

- (1) When possible, bears identified for destruction will be chemically immobilized and shot in the head with a 12-gauge slug or large caliber pistol to ensure a quick death. A bear will only be shot while free roaming in cases where its presence is an immediate threat to human safety.
- (2) Except in emergency situations, bears will not be destroyed within sight of visitors.
- (3) All identifying tags and radio transmitters will be removed and returned to the Wildlife Management Technicians.
- (4) Parts from bears killed may be used for research or interpretive programs in accordance with the appropriate guidelines covering natural history collections. Parts will not be retained by any interest for personal purposes or monetary gain. Collection and guidelines are available in Appendix R.
- (5) When these outlets are unavailable, destroyed bears will be returned to the ecosystem in locations far enough from roads, trails, and developed areas to minimize human interaction with scavengers or buried in the fenced garbage holding area along Highway 3. Disposal locations will be approved by the Wildlife Biologist. Necessary area closures will be established where carcasses have been left in the backcountry until the carcass is consumed.
- (6) Alaska Department of Fish and Game will be notified of any destruction in the park additions or preserve. A Defense of Life and Property form will be completed. The skull and hide will be collected (Appendix K) for sealing purposes and will be turned over to the state unless prior disposal arrangements have been made.

Injury or Fatality

This section outlines response to any bear-human interaction that results in human injury or death. All persons involved must recognize the high media profile of such an occurrence and conduct themselves and the transfer of information accordingly.

If a bear attack is reported to you:

1. Immediately begin a comprehensive log.

2. Maintain direct contact with the individual reporting the incident and obtain:

Name

Phone number



Location
Location of incident
Time of incident
Number of people involved
Number of people injured
Extent of injuries and property damage
All people accounted for? Y/N
Number of bears involved
Last known location of bears
Distinguishing characteristics of bear(s)

3. Immediately contact the following:

Communications Center: (907) 683-9555
The Communications Center can assist with further contacts.
Medical assistance (if necessary): (907) 683-9555
Wildlife Management Technicians: (907) 683-9574
East-District Ranger: (907) 683-9527
West-District Ranger: (907) 683-9525

4. As soon as immediate contacts have been made notify the:

Wildlife Biologist: (907) 683-9577
Assistant Superintendent of Resources, Science, and Learning (907) 683-9572
Chief Ranger: (907) 683-9521
Public Information Officer: (907) 683-9583
Superintendent: (907) 683-9581

5. Designate an Incident Commander from the list of individuals contacted.

Responsibilities

Incident Commander

1. Call medical assistance or place it on standby, as required.
2. Appoint 3-5 member Initial Response Team trained to deal with medical emergencies, bear management, and scene investigation, comprised of the following:
 - Wildlife Management Technician(s)
 - Park Ranger(s)
 - Translator (if required)
3. Establish a **Field Leader**. This individual may be part of the Initial Response Team. If not part of the Initial Response Team, he/she will assume command of the field operation upon arrival on the scene.



4. Initiate closure procedures.
5. Maintain a written record of the entire incident and response.
6. Ensure that each team member maintains a written record of his/her activities.
7. Activate Public Information Officer.
8. Keep the Superintendent, Assistant Superintendent of Resources, Science, and Learning, and Chief Ranger apprised of the status of the incident and response.

Field Leader

1. Evaluate available information.
2. Secure and evacuate all nonessential personnel from the area to insure safety.
3. Ensure the complete closure of the area.
4. Maintain communications with Incident Commander.
5. Establish teams to deal with a) Medical Emergency, b) Bear Management, c) Scene Investigation if necessary. Appoint Team Leaders as appropriate.

Bear Management Team Leader (Wildlife Biologist)

Implement the following procedures based on the following circumstances:

1. If injury/fatality occurred as a result of Curious, Mistaken Prey, Dominance, Surprise, Provoked, or unknown behaviors:

- Separate bear and people. Monitor the situation and keep the bear in view.
- Provide information on how incident could have been avoided.
- Document all actions.

A. Bear remaining in the immediate area of the incident, **identification positive:**

- Continue to observe animal for three days and close areas that it enters to prevent further contact with people.
- Conduct patrols to verify the bear is an unusual threat to people or if incident was unique.
- If test patrol determines the bear's behavior is **Conditioned, Rewarded**, or a **Threat**, destroy the bear.



- B. Bear not in area or its identification is uncertain.
 - Initiate closures in areas where it is suspected the bear may have moved to.
 - Conduct patrols to identify the bear involved in the incident.
 - If the bear is positively identified, follow the procedures outlined in A.
- 2. **Non-defensive, unprovoked attack aimed at securing anthropogenic food. Tolerant, Conditioned, Rewarded, or Threat behavior is positively present:**
 - A. **Bear still in immediate area of incident, behavior and identification positive:**
 - Destroy.
 - If there is doubt about the positive identification or behavior of the bear, relocate. Consider genetic techniques to positively identify the bear.
 - B. **Bear not in area:**
 - Initiate patrol procedures.
 - Open area when situation resolved or when five days of patrols have been conducted without contacting a bear with unacceptable behavior.
 - C. **Bear in situation A or B was relocated:**
 - If bear originally contacted was relocated, continue test patrols for an additional three days and nights after the relocation to determine if the correct animal was moved.
 - If another animal is contacted during these additional patrols then see 1B.
 - If no bear is contacted exhibiting Tolerant, Conditioned, Rewarded, or Threat behavior after this additional patrol period, open the closure.

Scene Investigation Team Leader

1. Ensure victim is interviewed:

- Take measurements, photographs, and sketches of wounds.
- Examine victim's clothing for hairs, punctures, and tears.
- Remain in contact with medical personnel attending to the victim and obtain details.
- Collect samples of blood, hair and tissue from bear for future DNA analysis.



- Determine the level of bear safety information received by the victim before the incident occurred.

2. Incident site investigation.

- If approaching scene by helicopter, avoid landing at incident site, which could disturb evidence.
- Ensure tracks and other sign is not disturbed by people walking around at the scene.
- Take measurements and photographs of bear foot prints at the scene. Note unusual marks and make a plaster cast of prints.
- Take measurements and photographs of injuries, especially with visible bite and claw marks. Note the location of the injuries on the victim's body.
- Photograph, measure, and record all data.
- Note surrounding vegetation and growth stage.
- Identify likely directions of the bear's approach and departure.
- Identify landmarks for location from air search.
- Investigate and note all natural and human food sources.
- Map trails, paths, day beds, rubbing trees, and footprints.
- Collect scats for DNA analysis.
- If the suspect bear carcass is available, secure a cloth bag over the head and each foot of the bear. Use paper if cloth is not available. Avoid plastic.
- Deposit the bear carcass to an available cooler as soon as possible.
- Bag any material from scene for examining for tooth and claw marks and recovery of bear fur and possible bear blood. **VERY IMPORTANT** - transport dead bear and evidence from victims in separate vehicles. **NOTE** - Bloody material should be air-dried at room temperature. If it cannot be air-dried then it should be kept frozen.
- Collect the victim's clothing in a bag for identification of blood and bear fur. A cloth bag is preferred, but plastic is acceptable if clothing is dry. If the clothing is wet, air dry at room temperature.

3. Interview the general public who use the area or have recently been in the area and may have observed bear activity.

Communications Center

1. Assist by performing call-out emergency response personnel.



2. Monitor and record radio communications between Incident Command and the Initial Response Team.
3. Process closure notices.
4. Keep Superintendent informed.

Public Information Officer

1. Responds to requests for information from the news media.
2. May appoint one park spokesperson who is directly involved with the operation to provide press statements.
3. Prepares written news releases.

In the case of human fatalities, a Board of Review will be convened, consisting of the Superintendent, Regional Director's representative, and two non-NPS bear experts (from state, Federal agencies, universities, etc.)

In the case of bear deaths resulting from management actions, a panel consisting of at least one Park representative, Regional Director's representative, and two non-NPS bear management experts will convene to review the circumstances surrounding the death. The review will assist the park in evaluating current bear management procedures and developing bear management program direction.

REFERENCES

Dalle-Molle, J.L., and J.C. Van Horn. 1989. Bear people conflict management in Denali National Park, Alaska. Pages 121 – 128 *in* Bromley, ed. Bear -- people conflict: Proc. of a Symp. On Manage. Strategies. Northwest Territories Department of Renewable Resources., Yellowknife.

Dean, Frederic C. 1987. Brown bear density in Denali National Park, Alaska, and sighting efficiency adjustment. *Int. Conf. Bear Res. And Manage.* 7:37-43.

Herrero, S. 1985. Bear attacks: their causes and avoidance. N. Lyons Books/ Winchester Press, Piscataway, N.J. 287pp.

Herrero, S. 1989. The role of learning in some fatal grizzly bear attacks on people. Pages 9-14 *in* M. Bromley, ed. Bear-People Conflicts: Proceedings of a Symposium on Management Strategies. Northwest Territory, Department of Renewable Resources, Yellowknife.

Herrero, S., and F. Fleck. 1989. Injury to people inflicted by black, grizzly, and polar bears: recent trends and new insights. *International Conference on Bear Research and Management*, 8:25-35.

Machlis. 1990. Denali National Park Visitor survey. Idaho State University, Moscow, ID.

Schirokauer, D.W. and H.M. Boyd 1998. Bear-human conflict management in Denali National Park and Preserve, 1982 -- 1994. *Ursus* 10:-395-403.



GLOSSARY

Aversive conditioning: A tool used by managers designed to modify undesirable behavior of permanently marked (e.g. ear tagged, radio-collared) bears.

Backcountry: Areas greater than 400 meters from developed areas and greater than 200 meters from the park road. The preservation of natural processes is the overriding management objective in backcountry areas.

Charge: Charges are direct and purposeful, involving running or loping to within 10 meters of a human. They often incorporate aggressive signals including huffing, chomping, short hops, and/or bouncing.

Conditioned Behavior: The recurrence of harmless, close encounters between humans and bears that may eventually cause bears to lose their fear of humans. This is especially true for young bears whose behavior patterns are still developing.

Container Test: Early in the bear-human management program, container test forms were distributed to determine how frequently bears would have obtained food had it been in plastic bags rather than in bear resistant food containers (BRFCs). These forms are no longer used, but whenever bears attempt to break into BRFCs, whether the situation is classified as an incident, encounter, or observation, it is noted as a Container Test. The dependability of BRFCs continues to be monitored.

Curious Behavior: Bears sometimes approach humans in an attempt to identify a scent or an object. Generally, they leave the area once they have come close enough to catch a human scent or sound. Some bears will remain in the area, but appear to ignore people and return to other activities. These interactions are considered to be a natural reaction and no management actions will be directed toward the bear.

Documentation: All bear-human interactions, wolf monitoring, and management actions will be carefully documented with field notes, BIMS Forms, or Case Incident Forms.

Dominance Behavior: Interactions of this type occur between bears as they establish dominance hierarchies. When people, intentional or unintentional, approach a bear it may provoke a similar response. In this case the bear responds to the human presence with aggressive posturing or a bluff charge. The aggressive response of bears on kills is also a manifestation of this dominance interaction behavior. This interaction is an acceptable, natural behavior and no action is taken against the bear. If anthropogenic food has been obtained, see **Rewarded**.

Encounter: Any interaction of close proximity (less than 50 meters) between bears and humans during which the bear exhibits a behavior that identifies that it was aware of the human presence (e.g. altering its course to avoid humans, standing on its hind



legs observing humans, etc.). Encounters include all cases of bears advancing on humans that do not result in a charge, property damage, or physical contact. This includes instances when a bear is driven off, or when the bear showed indifference to humans in close proximity.

Encounters include:

- When a human surprises a bear in a low visibility area and the bear remains calm.
- Indirect and hesitant approaches in distances less than 10 meters from a human.
- If humans attempt to scare a bear away and it leaves without making contact or remains lingering.
- Cases when bears damage property that is considered part of their normal environment such as road signs, culverts, picnic tables, scratching on cabins. Similarly, it is an encounter if a bear touches, sniffs, or plays with a Bear Resistant Food Container (BRFC) or other gear. Chewing on empty plastic bags, etc. out of curiosity does not constitute property damage and are also considered encounters.
- Bears periodically interact with vehicles along the park road. It is an encounter if a bear swings on a bus side-view mirror, bites on a bumper, or looks in a window. However, if damage occurs as a result of this interaction it is considered an **Incident**.

Food Conditioned: A bear that has obtained anthropogenic food may perceive human beings and their facilities as sources of food. This association of human scent and equipment with food could encourage a general curiosity about people in other non-camp situations. This behavior pattern is unacceptable. Bears that exhibit them will be subjected to aversive conditioning. Also called **Rewarded Behavior**.

Frontcountry: includes all developed areas such as campgrounds, residence areas, Science and Learning Center, visitor centers, and a zone of 300 meters around them. A 400-meter wide corridor centered along the park road and the general area enclosing the hotel, Riley Creek Campground, and the train station are also considered frontcountry. Maintained trails are considered frontcountry for the bear-human interaction analysis portion of this plan.

Habituated: A bear that is indifferent to a stimuli or event due to repeated exposure. For example, a bear that does not respond to buses because it lives along the road corridor.

Hazing: A management action directed at bears that are not permanently marked (this includes animals marked with paint pellets) when it is necessary to quickly deter them from problem areas or when radio collaring is logistically impossible.



Incident: Any interaction during which a bear makes minimal physical contact with a human that does not result in injury (e.g. walking on a human in a tent, touching a human with a paw). Incidents include any damage or loss of property or food and any charge at a human that results in contact. It is also considered an incident when a human is forced to take extreme evasive action (climbing a tree, playing dead, firing Counter Assault, etc.) in response to a bear, regardless if the action seems justified.

Incidents generally include interactions in which bears exhibit unusual behavior and require a response that includes a **Management Action**. The bear's behavior is the most important component in determining the appropriate management action.

Incidents include:

- Instances when a bear purposely walks to within 1-2 meters of a human or makes multiple approaches within 10 meters of humans making noise.
- When a human surprises a bear in a low visibility area and the bear exhibits signs of excitement within 10 meters of the human.
- For distances greater than 10 meters it is only an incident if the bear makes a secondary charge to within 10 meters or if extreme aggressive behavior is exhibited.
- When a bear touches a tent with humans inside or lingers near it showing interest.
- When a bear approaches a camp in which humans have been active for a prolonged time, it is an incident, particularly if the bear exhibits more interest in the humans than their gear.
- Any damage to camping gear is classified as property damage.
- Instances of bears attempting to break into cabins to obtain food or damaging structures.
- Bears periodically interact with vehicles along the park road. If a bear causes damage to a vehicle.

Injury: Any instance when a bear makes physical contact with a human and an injury results. This also includes cases when a human is injured escaping from a bear.

Interaction: Includes encounters and incidents but does not include sightings.

Investigating: All incidents involving bears and humans will be investigated when possible, as soon as Park Rangers or Wildlife Personnel can arrive on scene. Due to the nature of many backcountry incidents, information may be days old and site visits impractical. In such cases an attempt should be made to get a thorough report from parties involved.



Management Action: Any technique used to modify a bear's behavior including aversive conditioning, hazing, relocation, and destruction. Historically this has included area closures.

Marking: Bears will be marked to accurately identify them for monitoring and evaluation of behavior changes during hazing or aversive conditioning attempts. The least invasive marking technique is by paint ball. Paint used is oil-based and normally wears off within two weeks. Radio collaring and ear tagging is more invasive and will be used only for food rewarded, destructive, or aggressive animals.

Mistaken Prey Behavior: Charges and injuries have occurred when people were between a bear and prey, or were mistakenly perceived as natural prey by bears. This behavior has occurred during moose calving season when humans, moose and bears are in areas of limited visibility such as forest and shrubs. A mauling may result if the human behavior continues to elicit a predatory response (i.e., running). These interactions can be considered the result of confusion; management actions may not always be necessary.

Monitoring: Monitoring is accomplished through regular campground visits and patrols, road patrols, den site observations to observe bear behavior, reviewing BIMS forms and radio tracking when possible.

Predatory Behavior: A bear stalks a human as prey. This behavior is unacceptable. Identification of this behavior requires the destruction of the bear.

Provoked Behavior: Approaches by humans to within 50 meters, continued approaches, or following a bear, may constitute harassment and could provoke several of the interactions previously discussed.

Management actions may be directed toward the bear, but is not required since its reaction is regarded as natural, defensive behavior. Law enforcement action may be directed toward the people involved.

Removal: Destruction of a bear.

Rewarded Behavior: A bear that has obtained anthropogenic food may perceive human beings and their facilities as sources of food. This association of human scent and equipment with food could encourage a general curiosity about people in other non-camp situations. This behavior pattern are unacceptable. Bears that exhibit them will be subjected to aversive conditioning. Also called **Food Conditioned**.

Sightings: A bear is seen by people but is never aware of their presence.

Surprise Behavior: A bear suddenly confronted by a human may try to escape but if an escape route is unavailable, it may charge. These charges do not typically result in physical contact, however severe injuries are possible if the person tries to run



Female bears are particularly protective of their young and are more likely to view a person as a threat and charge when suddenly encountered at close range. This is considered defensive behavior and no action is taken.

Threat Behavior: Aggressive behavior that is not defensive, provoked, or a result of confusion. The bear involved reacts with bluff charges or threatening postures and vocalizations to human attempts to scare it off. Animals exhibiting this behavior are considered dangerous because of their predisposition to react violently during interactions.

This type of incident and behavior has not occurred in Denali. Bears suspected of this behavior would be tested using the procedure outlined in the Field Guidelines. Positive identification of this behavior may call for destruction.

Tolerant Behavior: A bear that is indifferent to human presence. This behavior is considered acceptable in isolated encounters as long as it does not involve a regular pattern of subsequent approaches. An animal may be naturally tolerant. If due to repeated exposure to people, a bear becomes indifferent to humans it is considered habituated.

If it is apparent that the bear is beginning to linger around people or facilities the behavior may be unacceptable and the bear should receive hazing and/or aversive conditioning.

Waste: Discarded food and drink, garbage, litter, recyclable materials that may contain remnants of food or drink, or other decomposable material that might have odors attractive to animals.



**Appendix A. Grizzly and Black Bear Management Project Statement
From Denali National Park and Preserve's Resource Management Plan
August, 1998**

GRIZZLY AND BLACK BEARS

PROJECT CODE: DENA-N-364.2

SERVICEWIDE ISSUES:

| | |
|-----|--|
| N18 | Visitor Use Impacts on Backcountry Park Resources |
| N24 | Human Impacts Within and Adjacent to Park |
| N16 | Biological Impacts of Near-Park Development on Populations of Animals |
| N20 | Lack of Basic Data - Insufficient Understanding of Park Ecosystems and Threats to Them |

STATEMENT OF PROBLEM

Present Condition

Denali National Park and Preserve currently receives over 600,000 person days of visitor use per year in an area with grizzly bear (*Ursus arctos*) densities as high as 32 bears/1000km² (Dean 1987, Keay unpublished data). As visitation to Denali continues to increase, so will the potential for impacts to bear populations. Grizzly bears and black bears (*U. americanus*) are unpredictable animals that can seriously threaten human safety (Herrero 1985). In Denali National Park, many people have the opportunity to observe grizzly bears in their natural environment. In 1989, 95% of park visitors using the visitor transportation system were able to observe grizzly bears along the park road (Machlis 1990). The park provides a valuable opportunity for the public to foster an appreciation and understanding of bears. This appreciation and public support could enhance efforts to conserve threatened bear populations in other areas.

Despite the legal protection of grizzly and black bears within the wilderness portion of the park, the bear population continues to face impacts from human activities inside park boundaries and throughout surrounding areas. Within and adjacent to the park, bears must adapt their behavior to a variety of widely dispersed human influences. These influences include garbage dumps, garbage incinerators, food caches, human developments, frontcountry hiking and camping, backcountry hiking and camping, existing and proposed road use, development, and legal and illegal harvest. These influences have potential to

impact movements of bears, bear behavior, and population sex and age structure resulting in an unnatural bear population.

Visitor use in Denali continues to rise. Consequently, the potential for conflict between bears and people is a major concern. Bear-human conflicts result in loss of wild and free ranging bears and could threaten human safety. Bear behavior and ecology is strongly influenced by the motivation to obtain high energy sources of food. The availability of human foods increases as visitor numbers increase. Availability of human food and garbage at campsites, campgrounds, and other areas of human use may attract both black and grizzly bears. Habituation of bears to people by food rewards is the primary factor associated with bear-human conflicts in national parks (Herrero 1985, Herrero and Fleck 1989). Food-conditioned bears may behave aggressively toward people in order to obtain food. Although no human fatalities have occurred in the park and injuries are few, the number of bear-human incidents and encounters is high. In 1996, over 240 bear-human interactions were reported. Incidents involving property damage are an annual occurrence. Factors affecting bear-human conflicts must be investigated. The continued experimental development and implementation of a bear-human conflict management program, by professional biologists and highly trained technicians, is essential to visitor safety and resource protection.

The increase in visitor use over the years has resulted in an increase in vehicular traffic on the park's primary artery. In an attempt to reduce the impact to bears from increased vehicle use, the park established the visitor transportation system in the early 1970's. This is a shuttle bus system, designed to minimize disturbance to wildlife and to maximize wildlife viewing opportunities. It is not clear what impact use of the visitor transportation system has had on bear behavior along the road corridor. It is also impossible to establish biologically-sound use limits with our current level of knowledge.

In addition to the consequences associated with increased visitor use, bears are subject to harvest by subsistence and sport hunters within the 1980 new park additions and outside the park. A great deal of this harvest activity occurs on preserve lands and on state lands immediately adjacent to the park on the south side of the Alaska Range. National Park Service presence in this area prior to 1980 was minimal. Subsequently, the bear activities, population status, and extent of impact from this harvest is not well known.

When dealing with harvested populations, the ability to determine trends in population numbers and reproductive status is critical. Numerous efforts have been made to quantify the bear population within Denali National Park. Currently no method exists for management to readily and consistently obtain up-to-date and accurate numbers.

Current Management Actions and Results

Denali park staff have developed a bear-human conflict management program for the park (Stahlnecker 1994). This program has been the result of over a decade of experience, research, and consultation with other bear biologists. The goals of this program are based on management policies of the National Park Service and legislation which applies specifically to Denali. Specific goals are to (1) maintain the natural processes affecting the genetic integrity, distribution, abundance, and behavior of black and brown bear populations; (2) provide visitor safety by minimizing bear-human conflicts and the resulting personal injuries and property damage; (3) provide opportunities for visitors to understand, observe, and appreciate black and brown bears as part of an intact ecosystem; and (4) minimize management actions considered intrusive to bears. Currently bear management policy meets these goals by stressing preventive management as the first step toward problem resolution. Efforts are focused on identifying and resolving the causes of bear-human conflict through appropriate research, management, and public education.

Research, conducted by a U.S. Geological Survey-Biological Resources Division (USGS-BRD) research biologist, is underway to determine the status and trend of grizzly bears in the park and the primary factors affecting grizzly bear population dynamics. The research will also investigate an effective method to monitor populations throughout the park. Results of this research will assist in answering management questions concerning bear densities and population characteristics. Radio collars are used in this research.

Management of bears and people in Denali National Park should be based on sound scientific principles. Seasonal habitat selection, availability of natural foods, and distribution affect population dynamics and patterns of bear-human interactions. Scientific research is necessary to understand the relationship between bears and humans within the park and formulate management strategies to minimize conflicts. Monitoring population dynamics, movements, and density of black and brown bears, and the effects of hunter harvest, will provide information critical to the management of Denali National Park as a functioning ecosystem. Knowledge of population and behavioral change is needed to assist studies in progress on bear ecology, predator prey relationships, and the effects of traffic on wildlife use of the road corridor.

RECOMMENDED ACTIONS

A. Program Administration and Planning

N-364.201: Convert the Seasonal Wildlife Management Technician Positions to Permanent (Subject to Furlough) and Create an Additional Position

Extended seasons, from four months to seven months, for the wildlife technicians would facilitate end of season data entry and analysis, equipment repair and ordering, and report writing. Bear resistant food containers (BRFCs) would be adequately maintained. The extension of these positions would provide time for monitoring bear-human interactions on the south side of the Alaska Range during the spring snowmachine season, maintenance of a wildlife harvest data base for land adjacent to the park, and conducting bear education programs at local schools. Structuring these positions in such a way would provide continuity, facilitate positive relationships with inholders and local government agencies, and decrease the need to continually train new personnel in a highly complex and technical operation.

As visitor use activities continue to increase on the south side of the Alaska Range, one additional wildlife management technician will be needed to deal with the added bear-human conflicts that may occur.

N-364.202: Develop Cooperative Planning Agreement With Local Government Agencies

Contacts and agreements will be developed with the Denali Borough, Department of Transportation, Denali State Park personnel, and state regulatory agencies to implement food and garbage handling regulations and ordinances in areas outside the park and on private lands within the park. All regulations would be established to ensure no impact to the natural behavior of bears residing in the park. Methods would be developed to share information on the location and nature of bear problems and bear human interactions. If biological research indicates that subsistence or sport hunting activities within the 1980 park or preserve additions or on state lands adjacent to the park have an adverse impact on the bear population within the park, the Federal Subsistence Board or Alaska Board of Game would be encouraged to modify bear hunting regulations and bag limits on lands within and surrounding the park.

N-364.203: Maintain Adequate Training for the Wildlife Management Personnel

Bear control actions would be enhanced by the availability of sufficiently trained personnel and properly maintained equipment to safely and efficiently handle problem bears. Wildlife management personnel will be knowledgeable of bear behavior, shotgun qualified, and trained in the use of aversive conditioning techniques. They will be proficient in chemical immobilization and handling of bears. This will be accomplished by sending personnel to training with other parks or agencies as necessary. The park will coordinate with USGS-BRD research to maintain one permanent employee at a fully-trained park practitioner level. Personnel with adequate training and authorization to immobilize bears must be

available at all times to respond to bear incidents. A quick response to problem bear situations is critical to a successful management program.

N-364.204: Update the Bear-Human Conflict Management Plan Annually

The bear-human conflict management plan would be reviewed annually and updated as necessary to reflect areas of concern and current bear management situations. The plan would address evolving issues such as increasing activity and development on the south slope of the Alaska Range. Planning would encompass methods to determine and measure wildlife harassment by snowmachine users. The implementation of closures around critical areas such as den and kill sites would also be addressed on a parkwide basis.

N-364.205: Publish Summary of Bear/Human Conflict Program

Park staff has gained important experience and data on bear-human conflicts. This information should be synthesized and published to assist others with bear management programs.

B. Research

N-364.211: Coordinate Black and Brown Bear Research Program

Ongoing grizzly and black bear research will be supported by the park and encouraged to continue. Research efforts would be expanded to develop a park-wide, comprehensive, problem-oriented research program to provide management with knowledge of black and grizzly bear population characteristics. Emphasis would be placed on studying distribution and movements, behavior, human-bear interrelationships, and the impacts of management programs on the bear population within the park. Specific information will include seasonal habitat selection by bears in areas along the park road, in the backcountry, and south of the Alaska Range and the identification of areas with a high potential for bear-human conflicts. A habitat model would be developed to provide a more detailed picture of bear use and potential habitat. Some specific research problems include:

1. Integrate bear research with ongoing predator-prey studies and incorporate the role of all major predators and major prey species, taking a community approach to studying resource interactions throughout the park.
2. Determine what effect human activity, including garbage management, consumptive use, and backcountry hiking, is having on the bear population and movement patterns.
3. Model predator-prey and predator-predator interactions.

4. Determine the appropriateness, impacts to the bear population, and potential safety hazards associated with proposed in-park and near-park development.

N-364.212: Develop Bear Monitoring Protocols

Develop a monitoring protocol for evaluating bear population status and trend along the road corridor, the Stampede area, the south district, and in the preserve.

N-364.213: Recover Historic Data for Inclusion in Park Data Bases

Historic records from Murie, Dean, other researchers, bus drivers, wildlife observation cards, case incident reports, and interviews would be used to develop a picture of past wildlife population dynamics and distributions, and habitat use, along the road corridor. Whenever possible these data would be incorporated into park data bases and the park geographic information system (GIS). A document would also be prepared compiling the historic records

N-364.214: Investigate Road Use Disturbance to Bear Populations

See Road Use Impacts to Natural Resources DENA-I-670.

N-364.215: Develop Aversive Conditioning Techniques

A technique for delivering a capsicum-based spray, triggered by remote control, would be developed with professional-level oversight and direction by a Wildlife Biologist. Additional techniques will be developed and/or evaluated as opportunities occur.

N-364.216: Investigate Habitat Use and Population Status of Bears Occupying the South Side of Denali

In cooperation with the Alaska Department of Fish and Game and Denali State Park, habitat use and population status of grizzly and black bears on the south side of Denali would be investigated.

N-364.217: Support Independently Funded Bear Research Projects

The service will support independently funded bear research projects in Denali National Park by private and public organizations, agencies, and universities. The park would provide temporary housing and logistical support for field and laboratory work (Research Administration and Management DENA-I-410).

C. Mitigation

N-364.221: Remove Human Foods

The availability of BRFCs would be maintained to insure an adequate supply for all backcountry units. A BRFC program would be developed on the south side of the Alaska Range as the need arises due to increased visitor use. New BRFCs would be purchased each year to maintain a high quality stock. Bear-proof lockers would be maintained in developed campgrounds. Bear-proof food storage would be required at all NPS field camps. A proactive effort would be made to encourage local businesses inside and outside the park to conform with state regulations regarding food and garbage storage. Technical assistance would be provided to inholders and local businesses in developing secure food and garbage handling practices.

N-364.222: Implement Closure Procedure as Required in Bear-Human Conflict Management Plan

Based on procedures outlined in the bear-human conflict management plan and on monitoring results, closures would be implemented around den and kill sites as necessary. Implementation of necessary closures would counter harmful human disturbance of active bear dens and stop human activity from interfering with active kill sites. A commitment to long term, extensive monitoring of bear activity and den sites would be essential to implementing this mitigation action (DENA-N-364.205, DENA-N-364.231, and DENA-N-364.232).

N-364.223: Continue Current Experimental Aversive Conditioning

The wildlife management technicians would continue to aggressively use experimental aversive conditioning techniques under the oversight of a professional Wildlife Biologist. New techniques would be developed with professional-level oversight, evaluation, and direction (DENA-N-364.215). All actions would be carefully documented and evaluated to determine their effectiveness.

N-364.224: Develop Interagency Habitat Linkages

Denali National Park and Preserve biologists would coordinate with ADF&G and other adjacent land management agencies toward developing habitat linkages which would ensure a large, healthy, contiguous population of grizzly bears and black bears into the future.

D. Monitoring

N-364.231: Maintain Adequate Parkwide Monitoring of Human-Bear Encounters and Incidents

All visitors would be encouraged to report any bear incident to a uniformed National Park Service employee. Uniformed employees would interview the witness/victim and complete a bear information management system (BIMS) form used to monitor individual bears, bear activity, and bear management actions. The wildlife management technicians would provide training to NPS staff on the use of these forms. A computerized bear information and management system would be maintained to aid in the analysis and evaluation of the park's bear management program.

A monitoring system would be implemented to begin evaluating the effect of snowmachine use on wildlife during March and April on the south side of the Alaska Range. Efforts would also be made to obtain bear-human interaction data from the south district.

The wildlife technicians would record the locations of bear-human encounters and incidents as universal transverse mercator (UTM) coordinates suitable for entry in the park GIS.

N-364.232: Implement Annual Bear Monitoring Program

A technique would be developed (DENA-N-364.212) and conducted on a regular basis to gain information on bear population status and trends including densities, numbers, distribution, composition, age class, and productivity. Attempts would be made to duplicate previous survey efforts to allow comparability of data. Survey efforts would be coordinated with ADF&G Biologists to ensure complete and accurate reporting of population status within and adjacent to the park.

Data from surveys in the preserve lands would be used by park managers to evaluate sport harvest effects on bear populations. Data may be used to support changes in annual season and bag limit regulations as necessary.

N-364.233: Update Bear Information Management System Data Base

The suitability of data from the late 1970's to 1992 would be evaluated and added to the BIMS data base if appropriate. Where possible, the locations of past bear interactions would be recorded as UTM coordinates suitable for entry in the park GIS.

N-364.234: Track Alaska Dept. of Fish and Game (ADF&G) and US Fish and Wildlife Service Bear Management Decisions and Harvest Data on Adjacent Lands and in the Preserve

All bear management decisions would be monitored and input would be provided as appropriate. A data base would be maintained of wildlife harvest on lands adjacent to the park and in the preserve. An effective dialogue would be established with ADF&G staff and users to ensure data quality and continuity.

N-364.235: Gather Known Bear Data for South District

The wildlife technicians would monitor and gather data on den locations, concentrations of wildlife, and kill sites in the south district. The information sources would include local residents and users, and historic records and reports.

N-364.236: Implement Monitoring Protocol for Predation Events

N-364.237: Implement Berry Production Monitoring Protocol

N-364.238: Monitor Human Use Patterns

Human use activities, particularly backcountry use, would be tracked and analyzed on a regular basis to assist in determining areas with high potential for bear-human interactions.

E. Interpretation

N-364.241: Maintain Adequate Level of Public Information

Information about black and grizzly bears would be distributed throughout the park. All visitors obtaining campground permits or backcountry use permits will be given verbal and written warnings about black and grizzly bears. Adequate staff would be available at the visitor access center backcountry desk to provide information and record reports of bear-human interactions. An informative article about bear behavior and bear-human interactions will be published in the Denali Alpenglow. Interpretive activities will emphasize the potential hazards of bear-human interactions in a uniform fashion. The wildlife management technicians will provide training to the interpreters on disseminating the 'bear warnings'. Signs posted at developed campgrounds will advise campers about proper food and garbage storage. Special training about bear ecology and behavior will be required for all NPS and concession employees. As the wildlife technician function continues to evolve, their ability to assist with these duties will diminish. Funding is needed to provide seasonal interpretive support to accomplish these tasks.

F. Protection

N-364.251: Maintain Adequate Level of Regulation and Closure Enforcement

Protection of bears, their habitat, and public safety would be enhanced by evening campsite and overnight backcountry patrols in areas characteristic of frequent bear-human interactions. Campsites and backcountry areas that experience bear problems would be temporarily closed to protect visitors and minimize the need to manipulate bears. Closure signs would be constructed during the winter so supplies are always available. Protection of bears and their habitat would be enhanced by regulation enforcement throughout the park and preserve. Human disturbances near bear activity sites would be stopped when encountered by park rangers and resource personnel and the violations would be immediately reported to the Ranger Division. The park would utilize the Alaska Department of Public Safety, Division of Fish and Wildlife Protection's Violation Reporting Program to encourage visitors to turn in individuals intentionally harassing or disturbing bears and their prey. Information posters and pamphlets developed by the state for the Turn In Poachers program would be distributed in the park by NPS personnel. As the wildlife technician function continues to evolve, their ability to assist with these duties will diminish. Funding is needed to provide seasonal law enforcement support to accomplish these tasks.

STAFFING & FUNDING (1998)

| PROJECT/ACTIVITY | YEAR01 (\$1000/FTE) | YEAR02 | YEAR03 | YEAR04 | SUBTOTAL |
|-----------------------------------|------------------------|-----------|-----------|-----------|-------------|
| PROGRAM ADMINISTRATION | | | | | |
| - Inter-Agency Planning | | 50.0/0.1 | 25.0/0.1 | 25.0/0.1 | 100.0/0.3 |
| - Training | 10.0/0.0 | 10.0/0.0 | 10.0/0.0 | 10.0/0.0 | 40.0/0.0 |
| RESEARCH | | | | | |
| - Coordinate Research | 50.0/0.2 | 100.0/1.0 | 100.0/1.0 | 100.0/1.0 | 350.0/3.2 |
| - Develop Monitoring Procedures | 200.0/0.7 | 200.0/0.7 | 200.0/0.7 | | 600.0/2.1 |
| - Recover Historic Data | 10.0/0.2 | | | | 10.0/0.2 |
| - Develop Aversive Conditioning | 50.0/0.0 | 50.0/0.0 | | | 100.0/0.0 |
| MITIGATION | | | | | |
| - Remove Artificial Foods | 8.0/0.0 | 8.0/0.0 | 8.0/0.0 | 8.0/0.0 | 32.0/0.0 |
| MONITORING | | | | | |
| - Monitor Bear/Human Interactions | 60.0/1.2 | 60.0/1.2 | 60.0/1.2 | 60.0/1.2 | 240.0/4.8 |
| - Monitor Bear Population | | 30.0/0.1 | 30.0/0.1 | 30.0/0.1 | 90.0/0.3 |
| - Monitor Predation | 10.0/0.2 | 5.0/0.0 | 5.0/0.0 | 5.0/0.0 | 25.0/0.2 |
| - Monitor Berry Production | 15.0/0.2 | 5.0/0.1 | 5.0/0.1 | 5.0/0.1 | 30.0/0.5 |
| INTERPRETATION | | | | | |
| - Public Information | 11.3/0.2 | 11.3/0.2 | 11.3/0.2 | 11.3/0.2 | 45.2/0.8 |
| PROTECTION | | | | | |
| - Enforcement | 14.0/0.3 | 14.0/0.3 | 14.0/0.3 | 14.0/0.3 | 56.0/1.2 |
| TOTALS | 438.3/3.7 | 543.3/3.7 | 468.3/3.7 | 268.3/3.0 | 1718.2/13.6 |

COMPLIANCE

All appropriate NEPA, NHPA, and ANILCA compliance documents will be prepared before initiation of any project and will be maintained on file at Denali National Park and Preserve headquarters.

REFERENCES

Bunnell, F. L., and D. E. N. Tait. 1978. Bears in models and in reality-implications to management.

Dean, Frederic C. 1987. Brown bear density in Denali National Park, Alaska, and sighting efficiency adjustment. *Int. Conf. Bear Res. And Manage.* 7:37-43.

Herrero, S. 1985. Bear attacks: their causes and avoidance. N. Lyons Books/ Winchester Press, Piscataway, N.J. 287pp.

Herrero, S. 1989. The role of learning in some fatal grizzly bear attacks on people. Pages 9-14 in M. Bromley, ed. *Bear-People Conflicts: Proceedings of a Symposium on Management Strategies*. Northwest Territory, Department of Renewable Resources, Yellowknife.

Herrero, S., and F. Fleck. 1989. Injury to people inflicted by black, grizzly, and polar bears: recent trends and new insights. *International Conference on Bear Research and Management*, 8:25-35.

Jope, K. L. 1985. Implications of grizzly bear habituation to hikers. *Wildlife Society Bulletin*, 13:32-37.

Machlis. 1990. Denali National Park Visitor survey. Idaho State University, Moscow, ID.

Mattson, D. J. 1989. Human impacts on bear habitat use. *International Conference on Bear Research and Management*, 8:33-56.

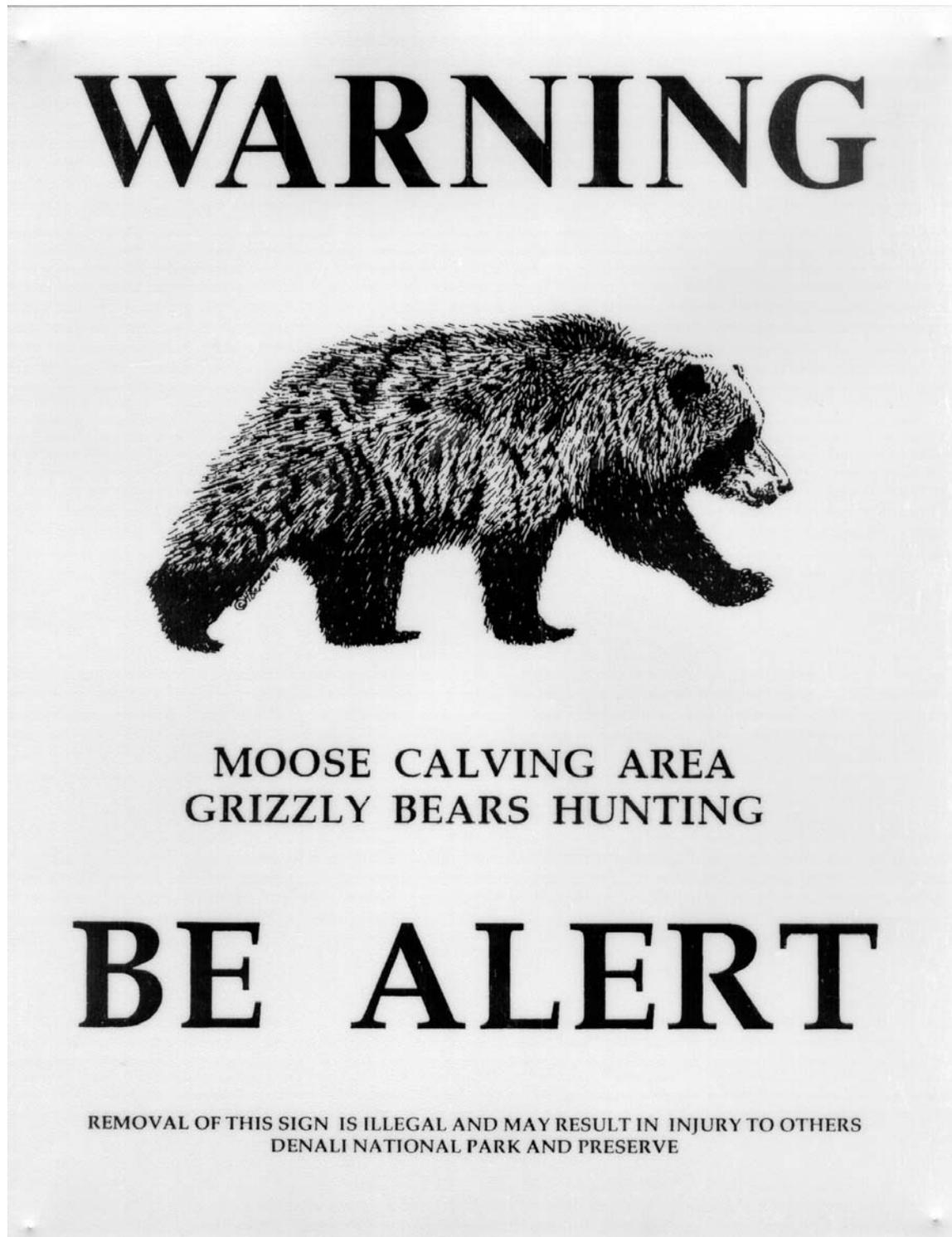
Mattson, D. J., R. R. Knight, and B. M. Blanchard. 1987. The effects of developments and primary roads on grizzly bear habitat use in Yellowstone National Park, Wyoming. *International Conference on Bear Research and Management*, 7:259-273.

McLellan, B. N., and D. M. Shackleton. 1989. Immediate reactions of grizzly bears to human activities. *Wildlife Society Bulletin*, 17:269-274.

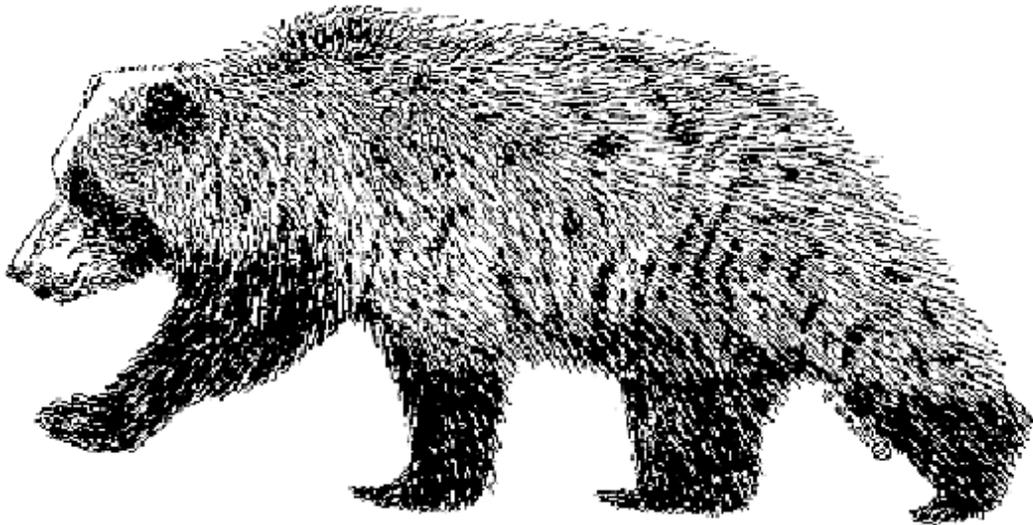
Meagher, M. and Phillips. 1983. Restoration of natural populations of grizzly and black bears in Yellowstone National Park. *International Conference on Bear Research and Management*, 5:152-158.

Stahlnecker, K.E. 1994. Bear-human conflict management action plan, Denali National Park and Preserve. Unpublished Draft. U.S. Department of the Interior, NPS, Denali National Park and Preserve. Denali Park, Alaska. 45+pp.

Appendix B. Approved Signs and Notices



WARNING



GRIZZLY FREQUENTING AREA

BE ALERT

REMOVAL OF THIS SIGN IS ILLEGAL AND MAY RESULT IN INJURY TO OTHER PERSONS

DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

WARNING **FOOD AND ODORS ATTRACT BEARS**

The following items (new, clean, dirty, empty or full) may **NOT** be left outside, in tents, or in tent trailers at any time, **DAY OR NIGHT**, unless they are in immediate use! Store items in hard-sided vehicles (RV or auto) or in the food storage lockers located in this campground.

| | |
|-----------------------|-------------------------|
| Coolers / Ice Chests | Stoves / Grills |
| Trash or Trash Bags | Food |
| Beverage Containers | Cosmetics / Toiletries |
| Sealed Cans / Bottles | Pet Food / Bowls |
| Cooking Utensils | Wash Basins |
| Eating Utensils | Any Item with Food Odor |



© Olaus Murie

A violation may result in a \$150.00 citation and confiscation of these items.

THE BEARS' FUTURE AND THE SAFETY OF OTHERS DEPENDS ON YOU!



KEEP WILDLIFE WILD

Never Feed or Approach Wildlife

Fed animals lose their wildness, may become unhealthy and often threaten people and property.

What You Can Do:

- Don't share your food with wildlife.
- Never leave food unattended, even for a short while.
- Properly dispose of garbage in bear-proof trash cans.
- Leave the area cleaner than you found it.

A violation may result in a **\$150.00 fine**. *Title 36 Code of Federal Regulations, Section 2.2 (a)(2)*



AREA CLOSED

Entering a closed area or removal of this sign is punishable by
A fine of up to \$500 or imprisonment for 6 months or both.

BEAR DANGER

AREA CLOSED

CRITICAL WILDLIFE HABITAT

CLOSED TO ALL ENTRY

Entering a closed area or removal of this sign is punishable by

A fine of up to \$500 or imprisonment for 6 months or both.

Appendix C. Backcountry Use Permit

BACKCOUNTRY USE PERMIT

Denali National Park and Preserve
National Park Service
U. S. Department of Interior

Please keep this permit accessible while traveling, and display it on your tent once camp is established.

It is the responsibility of the trip leader and all trip participants to know and obey backcountry regulations and the following permit conditions. Violations may invalidate an entire permit and result in legal consequences.

- A valid backcountry permit is required for all overnight use in Denali Backcountry Units 1-43. It must be in your possession or displayed on your tent while in the backcountry.
- A backcountry permit is valid for only the dates, locations, and party members specified. Non-emergency deviation from the permitted itinerary, including delay of the start of a trip, is prohibited, and will invalidate the entire permit.
- A backcountry permit is valid only for overnight recreational activities. Any other use of the backcountry as an alternative place of residence is prohibited.
- Camping is prohibited within view of, or within ½-mile (0.8 km) of, all roads and developed areas.
- Entry into closed areas or disturbance of critical wildlife habitats such as denning areas or nesting sites is prohibited.
- In Denali Backcountry Units where Bear Resistant Food Containers (BRFCs) are required, all food, garbage, and scented items must be stored in BRFCs and placed at least 300 feet (90 meters) from camp. BRFCs must be returned, undamaged, within 48 hours of trip completion.
- All garbage, including sanitation products, must be packed out. Human waste must be buried 6 inches (15 cm) deep in soil and a minimum of 100 feet (30 meters) from water and 200 feet (60 meters) is recommended.
- Disturbance of wildlife, plants, antlers, artifacts, rocks, or any natural or cultural objects is prohibited.
- Fires, pets, or weapons are prohibited in the Denali Wilderness.
- All bear encounters, especially those with property damage or personal injury must be reported to a ranger.
- Commercial use is prohibited except by incidental business permit or concessions license.

Safety Warnings and Recommendations:

- Avoid bear encounters. Make noise while traveling. Never run from a bear. Read the Alpenglow section on bear safety.
- River and glacier crossing can be dangerous.
- Avoid hypothermia. Stay warm and dry.
- Know your group's limits and stay within them.
- Boil, filter, or treat your water to protect against Giardia and Cryptosporidia.
- Practice Leave No Trace principles.
- Respect private property in Kantishna (Kantishna Advisory)

Signatures

Date

Appendix D. Federal and State Regulations

REGULATIONS FOR FOOD STORAGE AND REFUSE DISPOSAL

Code of Federal Regulations

36 CFR 2.10(d) states “The Superintendent may designate all or a portion of a park area where food, lawfully taken fish or wildlife, garbage, and equipment used to cook or store food must be kept sealed in a vehicle, or in a camping unit that is constructed of solid, non-pliable material, ... or shall be stored as otherwise designated. Violation of this restriction is prohibited. This does not apply to food that is being transported, consumed, or prepared for consumption.”

Superintendent’s Compendium

2.10 Camping and Food Storage:

(b) Food Storage: Food, garbage, and equipment used to cook or store food must be kept sealed in a vehicle, or in a camping unit that is constructed of solid, non-pliable material, or secured in food storage lockers provided in each campground. Bear resistant food containers, (BRFC’s), for backpackers are recommended for all backcountry zones, and are mandatory in most zones. This requirement may change according to management needs in line with the park’s Bear/Human Conflict Management Plan. Use of containers will be governed by standard information given to all persons obtaining a backcountry use permit. Bear resistant food containers may be inspected by park rangers at any time to determine if food is appropriately stored and the unit properly sealed. Bear resistant food containers must be returned within 48 hours of returning from a backcountry trip. Failure to return the bear resistant food container within 48 hours of returning from a trip may result in a citation being issued. In forested areas, (when containers are not mandatory), food shall be suspended at least 12 feet above the ground and four feet horizontally from a post, tree trunk, or other object, and at least 300 feet down-wind and visible from tent sites. In treeless areas, food shall be placed, double wrapped in plastic, at least 300 feet downstream/hill from campsite. Additional details and recommendations on food storage can be found in the “Denali Alpenglow”, the park’s seasonal informational newspaper. Backcountry parties that have special needs due to size of their party, length of stay, mountaineering logistics, etc., must obtain permission of the North or South District Rangers, the Chief Ranger, or the Chief of Research and Resource Preservation to travel without BRFC’s where otherwise required.

Alaska State Statutes

5 AAC 92.230 Feeding of Game.

No person may intentionally feed a moose (except under terms of a permit issued by the department), bear, wolf, fox, or wolverine, or intentionally leave human food or garbage

in a manner that attracts these animals. However, this prohibition does not apply to use of bait for trapping fur bearers or hunting black bears under 5 AAC 84 - 5 AAC 92.

History - Eff. 7/5/85, Register 95; am 8/20/89, Register 111; am 7/1/93, Register 126

5 AAC 92.410 Taking Game in Defense of Life or Property.

(a) Nothing in 5 AAC prohibits a person from taking game in defense of life or property if

- (1) the necessity for the taking is not brought about by harassment or provocation of the animal, or by an unreasonable invasion of the animal's habitat;
- (2) the necessity for the taking is not brought about by the improper disposal of garbage or a similar attractive nuisance; and
- (3) all other practicable means to protect life and property are exhausted before the game is taken.

(b) Game taken in defense of life or property is the property of the state. A person taking such game shall immediately salvage the meat or, in the case of a black bear, wolf, wolverine, or coyote, shall salvage the hide and shall immediately surrender the salvaged meat or hide to the department. In the case of a brown bear, the hide and skull must be immediately delivered to the department. A surrendered hide and skull of a bear must be completely removed from the carcass. A surrendered bear hide must include attached claws. A person taking game under this section shall notify the department of the taking immediately, and within 15 days after the taking shall submit to the department a completed questionnaire concerning the circumstances of the taking.

(c) As used in this section, "property" means

- (1) a dwelling, permanent or temporary;
- (2) an aircraft, boat, automobile, or other conveyance;
- (3) a domesticated animal;
- (4) other property of substantial value necessary for the livelihood or survival of the owner.

History - Eff. 7/5/85, Register 95; am 8/20/89, Register 111; am 8/12/90, Register 115; am 7/1/94, Register 130

18 AAC 60.230 Solid Waste Management, State of Alaska Department of Environmental Conservation, Disease Vector, Wildlife, and Domestic Animal Control. As amended through October 29, 1998.

(a) The owner or operator of a facility subject to the permit requirements of AS [46.03.100](#) and this chapter shall manage the facility so that

- (1) disease vectors do not endanger public health, safety, or welfare or create a nuisance;
- (2) wildlife and domestic animals do not endanger public health, safety, or welfare; become harmed by contact with the waste; or become a nuisance; the requirements of this paragraph do not apply to a Class III MSWLF.

Appendix E. Summary of Individual Responsibilities for Implementing the Bear Human Conflict Management Plan

Superintendent

1. Responsible for approving the Bear-Human Conflict Management Plan and revisions.
2. Approves/disapproves the destruction of problem bears after consultation with the Assistant Superintendent of Resources, Science, and Learning, Wildlife Biologist, Chief Ranger, and District Ranger.
3. Approves or disapproves recommendations for temporary and emergency closures.
4. Informs inholders, and nearby neighbors of State and Federal regulations relating to food and garbage handling.

Concession Specialist

1. Ensures that agreements with concessionaires require bear proof facilities and handling practices for all garbage and food in the bus maintenance, store and concession residence, mercantile, and food court areas. The concessionaire must consistently comply with these requirements.
2. Incorporates requirements for bear proof food and garbage handling practices into all new and existing special use permits, business licenses, and concession contracts.
3. Contract Bus Driver Responsibilities Include:
 - a) Include information regarding the Alpenglow bear article, current closures, and regulations pertaining to the feeding of animals, in initial message to passengers.
 - b) Use Alpenglow bear article as reference when answering questions.
 - c) Direct people who have been involved in an interaction with a bear to DENA staff.
 - d) Ensure people remain on the bus when they are 1/2 mile of a bear.
 - e) Report any bear-human interactions they may witness on the park road to DENA staff.
 - f) Remain current on the locations of temporary and emergency closures. Informs the day hikers on the location of temporary and emergency closures.

4. Visitor Access Center Campground and Bus Desk Staff Responsibilities Include:
 - a) Verbally inform all frontcountry campers that food, cooking utensils, and cosmetics must be stored in a hard sided vehicle or in a food storage locker.
 - b) Point out the written version of the food storage requirements in the Alpenglow or on their campground permit.
 - c) Ensure that all campers receive the “Camping and Bears” information.
 - d) Direct people who have been involved in an interaction with a bear to DENA staff.

Ranger Activities Division

1. Chief Ranger
 - a) Participate in cooperative decisions with Assistant Superintendent of Resources, Science, and Learning, Wildlife Biologist, District Ranger and investigating field personnel on the translocation or destruction of a bear.
2. District and Sub-district Rangers
 - a) Supervise patrol rangers ensuring that they accomplish their specific responsibilities as outlined in the Bear-Human Conflict Management Plan.
 - b) Initiates recommendations for temporary bear-human conflict related closures and notifies Dispatch when closures are established or lifted.
 - c) In conjunction with field staff, make recommendations and participate in decisions for translocation or destruction of bears.
 - d) Directs the enforcement of bear management regulations. Contacts State enforcement agencies when food or garbage handling problems occur in areas under State jurisdiction.
 - e) A primary participant in bear management actions.
 - f) Responsible for posting closure signs and other special bear related notices.
 - g) Contact State Department of Environmental Conservation to determine if local businesses have current permits and have been recently inspected.
3. Patrol Rangers

- a) At every opportunity, advises visitors of proper food storage procedures and appropriate behavior when near bears. Enforces pertinent regulations as necessary.
- b) Alert for developing sanitation problems such as faulty garbage storage equipment, overflowing garbage cans, litter, etc. Makes emergency corrections, verbally reports and then documents in writing these problems for immediate, permanent correction.
- c) Completes BIMS forms, immediately forwarding them to the Wildlife Management Technicians.
- d) Patrols campgrounds at least once each evening to inform visitors of proper food and garbage handling procedures.
- e) Patrols NPS and concession residence and recreation areas daily to ensure food or garbage are not left on porches or picnic areas.
- f) Patrols the park's entrance area complex's garbage facilities; once during the day and once after 11 P.M., making sure dumpsters are closed, no garbage or litter is accumulating in the area, and all garbage containers are of a bear-proof design approved by the park. Documents compliance with standards on approved forms or in daily patrol logs.
- g) Patrols park's garbage holding facility off Highway 3 at least three times a week, making sure gate is locked, electric fence activated, holding tank doors closed, and all garbage is securely contained.
- h) Patrols Kantishna concessions garbage facilities, whenever possible and with the landowners permission; making sure dumpsters are closed, burn barrels are clean, no garbage or litter is accumulating in the area, and all garbage containers are bear proof. Ensures any outdoor food storage facilities are bear proof. Documents compliance with standards on approved forms or in daily patrol logs.
- i) Conducts aerial and regular foot patrols of hotel, train station and Riley Creek area for illegal summer camps.
- j) Remains alert for improper food and garbage handling practices by nearby neighbors, permittee, business license holders, subsistence users, and aircraft users at headquarters, Kantishna and other airstrips.
- k) Document all non-compliance found during patrols in writing to supervisor.

- l) Posts and enforces temporary closures, at supervisors direction when possible. Patrol Rangers may post closures on their own if the situation warrants. Follows closing procedure in appendix H.
 - m) Immediately informs District Ranger and Dispatch of all bear incidents and bears seen in developed areas.
4. Backcountry Sub-district Ranger
- a) Maintain the data base on BRFC use on the backcountry computer.
 - b) Insure that the backcountry desk staff are providing bear safety information to all backcountry users.
5. Backcountry Desk Staff
- a) Distributes the Alpenglow to all hikers and strongly recommends they read the bear safety article and view the backcountry video. If they speak French, German, or Japanese strongly suggests they view the foreign language slide program on backcountry safety. Provides the foreign language version of the bear safety brochure to French, German, Spanish, and Japanese speaking visitors.
 - b) Provide verbal warnings about bears and information on proper food and garbage handling to all persons receiving a permit. Documents this warning by checking off the "bears" section on the back of the permit (see Appendix C).
 - c) Distribute bear resistant food containers to backpackers and emphasize the need to close it properly and store it at least 100 meters from their campsite.
 - d) Asks all returning hikers about bear and wolf interactions and completes BIMS forms when appropriate.
 - f) Flag damaged BRFCs for the Wildlife Management Technicians to repair.
6. Mountaineering Rangers
- a) Provides bear safety information to all backcountry travelers entering bear habitat. Provides the foreign language version of the bear safety brochure to French, German, Spanish, and Japanese speaking visitors. Provides, and encourages the use of, BRFC to all backcountry travelers on the south side of the Alaska Range.
7. Communications Center

- a) Keep opening/closing log (Appendix H).
 - b) Immediately inform Wildlife Technicians, Wildlife Biologist, and District Ranger when an incident is reported.
 - c) Immediately inform Wildlife Technicians, Wildlife Biologist, District Ranger, and VAC and Eielson Visitor Centers, and others on the notification list (Appendix H.) of closures and lifting of closures of areas where incidents have occurred and of developed areas where bears have been seen. Also includes this information in morning reports.
8. Kennels Manager
- Will provide detailed training on how to minimize wildlife sled dog interactions to anyone involved in the summertime dog walker program, and the winter dog sled patrol program.
9. Campground Hosts
- a) Conduct patrols of the campground at least four times daily to check for food storage violation and inform visitors of campground regulations.
 - b) Move illegally stored food to food storage lockers, and inform patrol rangers, if campers are not present.
 - c) Record bear-human interaction on BIMS forms.
 - d) Inform Wildlife Management Technicians and Patrol Rangers of all reports of bear activity.
9. Alaska Public Lands Information Centers (APLIC).
- a) Verbally inform campers that food and coolers must be stored in vehicles or in bear proof food lockers.
 - b) Point out campground regulation written on back of camping permit.

Center for Resources, Science, and Learning

Resources Division

1. Assistant Superintendent for Resources, Science, and Learning.

Insure that Division Chiefs review their division's responsibilities in implementing the bear-human conflict management plan every spring.

2. Wildlife Biologist (GS-12 - Branch Chief)
 - a) Monitor impacts of management programs on bear populations.
 - b) Test and review new methods of managing bear-human conflicts before they are implemented.
 - c) Make recommendations and participate in decisions for translocation removals or destruction of bears.
 - d) Determine release sites for bears designated for translocation.
 - e) Provide recommendations for bear research, write proposals, assist with data analysis, manuscript production, and publication development.
 - f) Make presentations at training and professional sessions.
 - g) Arrange training sessions for proper techniques in chemical immobilization and wildlife handling for the Wildlife Technicians, as necessary.
 - h) Develop and revise the Bear-human conflict management plan.
 - i) Coordinate and annually evaluate the bear-human conflict management program.

2. Wildlife Biologist (GS-9)
 - a) Oversee BIMS and other bear management/research records.
 - b) Participant in bear management actions if necessary.
 - c) Oversees the preparation of summaries and written reports of park's bear-human conflict management activities for the park, regional office and other agencies and organizations as necessary.
 - d) Supervise Wildlife Management Technicians.
 - e) Ensure that bear ecology and safety training is provided to DENA, concession and local business employees.
 - f) Make presentations at training and professional sessions.

3. Wildlife Management Technicians

- a) Maintain readiness and quickly respond, investigate and document incidents. Implements management actions according to this plan or supervisor's direction. Must be prepared to stay out in the Park for several days/nights at a time.
 - b) Maintain capture, aversive conditioning, telemetry, vehicle and other bear management related equipment in a ready condition at all times.
 - c) Coordinate training sessions on prevention of bear-human conflicts for DENA employees, concession employees and bus drivers at beginning of each season. Documents all training sessions for inclusion in annual report.
 - d) Coordinate with backcountry desk staff to maintain a supply of BRFCs and data forms. Checks with desk staff at least twice a week for BIMS forms and damaged BRFCs.
 - e) Repair BRFCs as time permits. Attempt to track down overdue containers.
 - f) Make spot checks of hotel, campgrounds, landfill, work camps, and other facilities for garbage problems and to see that garbage handling equipment (barrels, dumpsters) are in proper working order. Cooperate and share information with patrol rangers on garbage problems and actions taken to correct problems. Documents all problems or actions.
 - g) Post closure or warning signs as stated in closure procedures in appendix H.
 - h) Compile and analyze bear-human conflict data and draft annual reports.
 - i) Monitor kill sites, keep track of predatory events.
 - j) Order and maintain supply of Denali bear safety information brochures, and closure and warning signs.
 - k) Complies biweekly bear activity updates and distributes them to park staff and park partners (see notification list in Appendix H.) Include recent bear incidents, unusual encounters, other noteworthy wildlife activity.
3. Drug Practitioner (Usually one of the Wildlife Biologists)
- a) Purchases, maintains inventories and distributes drugs to field areas.
 - b) Coordinates and teaches annual drug related bear management and handling training sessions.
 - c) Responsible for immobilization and capture equipment.

4. Environmental Specialist/ Compliance & Geologist
 - a) Ensure that all mining plans of operation and other environmental documents have stipulations regarding park and/or state requirements for food and garbage handling.
5. Subsistence Specialist
 - a) Inform subsistence users of state and federal regulations relating to food and garbage handling.
6. Research coordinator
 - a) Informs all investigators, conducting research, of State and Federal regulations relating to food and garbage handling.

Interpretive Division

1. Supervisors
 - a) Inform the Park's visitors of the bear situation at evening programs, visitor centers, on guided walks and during informal public contacts.
 - b) Consult with Wildlife Biologist and the Wildlife Management Technicians in preparation of books, pamphlets and other materials on bears and ways to minimize bear-human conflicts.
 - c) Maintain supplies of Alpenglow at the Visitor Center, Eielson Visitor Center, The Savage Check Station, The Science and Learning Center.
 - d) Responsible for initial posting and maintenance of bear behavior information on bulletin boards.
2. Field Staff
 - a) In all programs and guided walks interpreters will comment on the potential for bear-human conflict and recommend specific behavior to minimize the potential for conflict.
 - b) In introductory remarks to guided walks, discuss the group's action if they encounter a bear.
 - c) Spend a few minutes talking about bears if a program is canceled due to bear activity in an area.

- d) Talk with people about food and garbage handling practices during pre-program walks around campground.
- e) Eielson Visitor Center staff will follow Bear Protocol for EVC in appendix L.
- f) Eielson Visitor Center staff will record all bear observations within a 1/4 mile area of Visitor Center.
- g) Record all bear-human interactions they hear about from visitors or other staff on BIMS forms.
- h) Maintain the backcountry video and other automated information programs at the VAC.

Maintenance Division

1. Facility Manager

- a) Ensures that all contracts for construction or maintenance projects contain Park and/or State stipulations on proper food and garbage handling. Coordinates with Wildlife Biologist and District Ranger to provide training for contractor's employees on proper behavior in bear country.

2. Buildings and Utilities Foreman

- a) Maintain park garbage system in a bear proof condition at all times. Any inadequacies or system failures are considered health/safety problems and will receive immediate priority consideration in the work program.
- b) Maintain regular program of container cleaning, maintenance and cyclic replacement.
- c) Maintain the fence around garbage holding facility on Highway 3 in bear-proof condition.
- d) Provide regular litter patrols along roads, around developed areas and areas where people congregate. Provide additional patrols as necessary to ensure a trash-free environment.

3. Garbage Collectors and Caretakers

- a) During summer, check cans in all visitor use areas daily and housing areas three times a week. Empty cans if half full or if they emit a strong odor, replace with clean plastic liner.

- b) No garbage shall be stored overnight, except in the approved transfer chute on highway 3, in the approved garbage trucks or compactors with doors fastened shut, or in closed, hard-sided buildings.
- c) Ensure bear proof can lid is correctly seated on top of can.
- d) Pick up any litter seen along roads, in turnouts, accumulation around garbage cans or any other area. Eielson caretaker will patrol porches and picnic areas around V.C. for small food scraps and litter at least 3 times a day. Toklat caretakers will pick up around Stony, Toklat and Polychrome rest areas daily. Teklanika caretakers will pick up around the Teklanika rest stop.
- e) Close and fasten the doors to the transfer chute in the former landfill facility east of Highway #3. Close the gate to the facility, and activate the electric fence whenever area is used.
- f) Immediately report faulty containers, containers needing cleaning or oversights in the current garbage handling system that could minimize its effectiveness in preventing bear-human conflicts.

Other Responsibilities

- a) All supervisors (concession and Park) will ensure their employees are aware of the Park's bear management objectives and the methods being used to achieve those objectives.
- b) All employees are responsible for correcting deficiencies in garbage handling, and food storage as they become aware of them or to call them to the immediate attention of someone who can correct them. If informal communication does not result in prompt correction, the recommended action or statement of problem will be given to a higher level supervisor and the Wildlife Biologist.
- c) All park divisions and functions will coordinate their respective bear management needs through the Wildlife Biologist.

Appendix F. Guidelines for Use of Bear-Resistant Food Containers

Bear Resistant Food Containers (BRFCs) have been used since 1982 and have helped to reduce the number of bear incidents in the backcountry of DENA by 95%. The BRFC program is one of the cornerstones of Denali National Park and Preserve's bear human conflict management program. Fewer animals obtaining food decreases the chance of property damage, injury, and the destruction of bears. The Wildlife Management Technicians are responsible for ensuring adequate supply of BRFC's is available throughout the season.

VISITOR USE OF CONTAINERS

1. BRFCs are mandatory for backpackers in **all units** except 22, 23, 44 – 48, and 61 – 87 backcountry in the 1980 park additions and Preserve. There is no overnight use of backcountry units without a container in mandatory units. Mountaineers may spend the night in unit 20 without a BRFC to access mountaineering areas, or when traversing the Alaska Range.
2. Containers are recommended for units 22, 23, and backcountry in the 1980 park additions and Preserve. Judgement should be exercised in distributing containers in order to have them available for the mandatory backcountry units at all times. See Appendix Q. for BRFC status in each backcountry unit.
3. Individuals/groups unwilling to use the containers will be referred to areas where containers are not mandatory.
4. Mountaineering parties will have the following special regulations:
 - All parties will be given a food storage briefing and a bear safety orientation.
 - Mountaineering parties may not be required to carry BRFCs in unit 20, but will always be encouraged to use them.
 - Parties starting their trip from the Kantishna area may obtain a BRFC from the Wonder Lake Rangers. Arrangements can be made in advance with the Backcountry Sub-district Ranger.
 - The Talkeetna Ranger Station will keep a supply of containers to issue to parties that are crossing the range south to north.
5. Large Groups (15 people or more) that have been given exemption from the quota system (i.e. NOLS or the Sierra Club) will be required to carry BRFCs.

WEST END DISTRIBUTION

BRFCs will be available for visitors and/or west end employees in the Wonder Lake Sub-district. BRFCs will be located in the Wonder Lake Sub-district Office, at the Toklat Road Camp, and at the Wonder Lake Ranger Station. Backcountry and Road Patrol Rangers will be responsible for checking out these BRFCs.

All procedures for check out to visitors remain the same. The VC must be notified by the Wonder Lake Sub-District Staff if the container is going to be returned to the VC instead of in the Wonder Lake Sub-district.

DENA EMPLOYEES

The following positions may check out a container for longer lengths of time (i.e. the summer season) from their respective divisions, for official use: Backcountry Rangers, Wildlife Management Technicians, and Resource Management personnel on extended field work. These divisions also have their own supply of BRFCs. Administrative supplies of BRFCs are not to be used for recreational purposes. NPS employees using the backcountry on their lieu days are required to check out BRFCs from the backcountry desk and return them in a timely manner.

CONCESSION EMPLOYEES

Employees of local area businesses must check out BRFCs and return them in a timely manner. Their place of employment will be listed on their backcountry permit and stored on the backcountry permit computer.

OVERDUE AND LATE CONTAINERS

A BRFC is considered overdue two days past its due date. The Wildlife Management Technicians are responsible for locating overdue BRFCs. Local employees will be located through the personnel offices of their place of employment.

Any individual returning a BRFC late three times during one summer will result in the denial of backcountry permits for the remainder of the season. Visitors and employees that lose their BRFCs will be asked to replace them. The containers for sale at the Alaska Natural History Association outlet will be suggested as a replacement source. Visitors who have lost their containers may be issued a bill of collection. Late returns and losses of BRFCs are citeable offenses under 36CFR 2.10.

Appendix G. Documentation, Forms, and Form Guidelines

INTERVIEWING SUGGESTIONS

Try to obtain the following information using the forms and guidelines outlined in this appendix when interviewing a person who has been involved in a bear-human interaction.

Use a BIMS form as an outline for your interview.

Get the most precise location of the interaction. Question the person about details (i.e. how long did it take to walk to the site, landscape features in the immediate area, points from which the site might be visible). Remember the information gathered from this interview may provide the only directions to the site of the interaction. Be alert for inconsistencies in time, distance and topography. People unfamiliar with the area are often very confused about exact locations, so clarify this with questions from different angles. Work with a map and your knowledge of the area.

Get a good description of all the actions and reactions that took place before, during and after the interaction. Emphasize times, distances, physical setting, vegetation, wind direction, etc, in your questioning. What did the bear do? What did the people do? What did the bear do next? What did the people do next?

What is the current situation? When the people left camp was the bear still in the area? Is a dropped pack still in the backcountry? Are the tent and food still at the site?

Did the bear obtain food? How was it stored? Are you sure the container lid was properly fastened? You need to be specific.

Who was involved? Get addresses, but also try to find out where people involved in the incident might be staying for the next few days and how they can be contacted.

What type of prior information from the park did the people involved receive about bears? Were they given verbal and written information? Did they see signs? Did bus drivers, backcountry rangers, or interpreters advise them of current bear activities or closures?

Covering these points completely in conjunction with a BIMS form should provide the critical initial information required for determining what management responses might be necessary.

BIMS INSTRUCTIONS

1. Carry a few BIMS forms at all times.
2. Fill in all sections, except those marked "management use".

3. Use BIMS for all:
 - a) Bear-human interactions when people are on foot and the bear is aware of them
 - b) Property damage, injury, food and garbage incidents, including a bear unsuccessfully trying to get into a garbage can or vehicle.
 - c) Observations of bears seen within 0.4 km (1/4 mile) of developed areas (campgrounds, visitor centers, building complexes).
 - d) Bear handling and management actions.
4. Observations from vehicles farther than 0.4 km from developed areas do not need to be reported on BIMS. Observations made away from vehicles do not need to be on BIMS if the bear was apparently unaware of the people. Observations inappropriate for BIMS can be described on index or natural history cards. These are especially important if the observation is unusual, such as predatory activity, sow with cubs of the year, or several bears seen in one area on one day.
5. Do a separate BIMS for each separate interaction (incident, encounter, observation, or control). For example, if a bear damages tents in 2 campground sites in one night, two separate BIMS should be completed.
6. Management actions- Use the same Case Incident Number for all controls related to a particular bear.
7. Give BIMS forms to Wildlife Management Technicians promptly.
8. Wildlife Management Technicians will enter BIMS data into the BIMS database.

Case Incident Form #10-343 will be completed for all incidents involving an injury or property damage. The 10-344 can also be used to record additional narrative information for BIMS report. Copies of all these forms should be attached to the corresponding BIMS form. Give forms to supervisor and Wildlife Management Technicians promptly.

BIMS FORM

21. WHERE DID YOU LEARN TO BEHAVE IN BEAR HABITAT?

- A. Park interpretive program
- B. Backcountry video
- C. Park ranger
- D. Park newspaper
- E. Posted warnings
- F. Previous knowledge
- G. Books
- H. No information received

22. DESCRIPTION OF BEAR-HUMAN INTERACTIONS:

(Please describe what happened.)

23. REPORT COLLECTED BY: _____ (NPS Staff)

Date: _____

| | | |
|---|--|---|
| <p>MANAGEMENT USE ONLY</p> <p>1. Record number _____</p> <p>2. Case incident _____</p> <p>3. UTM East:</p> <p>____ . ____</p> <p>UTM West:</p> <p>____ . ____</p> <p>Entered by: _____</p> | <p>4. Bear Behavior:</p> <ul style="list-style-type: none"> A. Intolerant B. Curious C. Mistaken prey D. Dominance E. Surprise F. Provoked G. Tolerant H. Conditioned I. Rewarded J. Threat K. Predation L. Indeterminate | <p>5. Management Rating:</p> <ul style="list-style-type: none"> A. Observation B. Encounter C. Incident; General D. Incident; Gets food E. Incident; Prop.Damage F. Incident; Injury <p>Control Action:</p> <ul style="list-style-type: none"> G. Relocation H. Aversive Cond. I. Destruction J. Removal K. Hazing |
|---|--|---|

- d. C-Camp
- e. Headquarters Area
- b. RR Depot
- c. Concessionaire Housing
- q. Stony Hill Overlook
- r. Eielson Visitor Center
- o. Polychrome Rest Area
- p. Teklanika Rest Area

BEAR INFORMATION MANAGEMENT DENALI NATIONAL PARK and PRESERVE

1. PEOPLE INVOLVED:



Name: _____

Address: _____

City: _____ State/ Prov: _____

Country: _____

Zip Code: _____

2. GROUP TYPE:

- A. Park Visitor
- B. Concession Employee
- C. NPS Employee
- D. Professional Photographer
- E. Contractor/ Researcher
- F. Kantishna Resident/ Employee
- G. Mountaineer/ Climber

3. VISITOR ACTIVITY:

- A. Backcountry camping (overnight hiking)
- B. Day-hiking in backcountry
- C. Walking on road
- D. Hiking on maintained trail
- E. Driving on road
- F. Camping – developed campground
- G. Other _____

4. GROUP SIZE: _____

(number of people that encountered the bear)

5. TIME OF ENCOUNTER: Month: _____ Day: _____ Year: _____ Time: _____ am/pm

6. LOCATION OF ENCOUNTER: _____

(Mark exact location on map if possible.)

- A. Backcountry Unit Number: _____
- B. Developed area:
 - a. Riley Creek Campground
 - b. Morino Campground
 - c. Savage Campground
 - d. Sanctuary Campground
 - e. Teklanika Campground
 - f. Wonder Lake CG
 - g. Toklat Roadcamp
 - h. Igloo Campground
 - n. Entrance Area Trails

j. Park Road/ Roadside Mile # _____

k. Kantishna Developed Area _____

l. Wonder Lake Day Use Area _____

m. Other Locations _____

7. DESCRIPTION OF BEAR(S): 8. Second bear 9. Third Bear 10. Fourth Bear

A. Species: 1. Grizzly 1. Grizzly 1. Grizzly 1. Grizzly
2. Black bear 2. Black bear 2. Black bear 2. Black bear
3. Unknown 3. Unknown 3. Unknown 3. Unknown

B. Color: 1. Blond 1. Blond 1. Blond 1. Blond
2. Light brown 2. Light brown 2. Light brown 2. Light brown
3. Med brown 3. Med brown 3. Med brown 3. Med brown
4. Dark brown 4. Dark brown 4. Dark brown 4. Dark brown
5. Black 5. Black 5. Black 5. Black
6. Unknown 6. Unknown 6. Unknown 6. Unknown

C. Size: 1. Small 1. Small 1. Small 1. Small
2. Medium 2. Medium 2. Medium 2. Medium
3. Large 3. Large 3. Large 3. Large
4. Unknown 4. Unknown 4. Unknown 4. Unknown

D. Age: 1. Spring cub 1. Spring cub 1. Spring cub 1. Spring cub
2. Yearling 2. Yearling 2. Yearling 2. Yearling
3. Sub-adult 3. Sub-adult 3. Sub-adult 3. Sub-adult
4. Adult 4. Adult 4. Adult 4. Adult
5. Unknown 5. Unknown 5. Unknown 5. Unknown

E. Sex: 1. Male 1. Male 1. Male 1. Male
2. Female 2. Female 2. Female 2. Female
3. Unknown 3. Unknown 3. Unknown 3. Unknown

F. Collars, tags, etc.: _____

11. VEGETATION TYPE:

- A. Open Tundra
- B. Gravel river bar
- C. Forest
- D. High brush (taller than 3' or 1m)
- E. Low brush (shorter than 3' or 1m)
- F. Road

12. WHAT WAS THE BEAR DOING WHEN YOU FIRST SAW IT?

13. WHAT WERE YOU DOING BEFORE YOU SAW THE BEAR?

- A. Sleeping
- B. Eating/cooking
- C. Hiking
- D. Running
- E. Sitting
- F. Photographing
- G. Setting up/Breaking camp
- H. Other _____

14. HOW DID THE BEAR REACT TO YOU?

- A. Not aware of people
- B. Stood on hind legs
- C. Growled/woofed/made noise
- D. Walked away
- E. Ran away
- F. Ran towards people
- G. Remained in area ignoring people
- H. Watched people
- I. Walked towards people
- J. Circled around people
- K. Bluff charged
- L. Made contact with person
- M. Investigated equipment/property
- N. Other _____

15. WHAT DID YOU DO THEN?

- A. Walked away/ backed away
- B. Ran away
- C. Remained still/quiet
- D. Continued hiking same direction
- E. Used pepper spray
- F. Made noise (talked, yelled, banged pots)
- G. Threw something at bear
- H. Photographed bear
- I. Abandoned property (pack, tent, gear)
- K. Other _____

16. HOW DID THE BEAR REACT?

- A. Walked away
- B. Ran away
- C. Walked towards people
- D. Ran closer
- E. Remained in area ignoring people
- F. Stood on hind legs
- G. Watched people
- H. Circled around people
- I. Bluff charged
- J. Made contact with person
- K. Investigated property
- L. Other _____

17. HOW CLOSE DID YOU COME TO THE BEAR? _____

18. WAS HUMAN FOOD PRESENT?

- A. No food present
- B. Food in BRFC
- C. Food odor only
- F. Food hung in tree
- G. Food outside BRFC
- H. Unknown

19. WAS HUMAN FOOD EATEN BY THE BEAR? A. No B. Yes (what?) _____

- A. Feeding on vegetation
- B. Feeding on carcass
- C. Hunting
- D. Digging
- E. Standing
- F. Resting
- G. Breeding

- H. Walking towards people
- I. Running towards people
- J. Running away from people
- K. Traveling
- L. Playing (with _____)
- M. Investigating property
- N. Other _____

(During this encounter.)

C. Unknown

20. WAS PROPERTY DAMAGED? A. No B. Yes (list property and estimate costs)

BEAR FIELD DATA FORMS

These form will be completed during any chemical immobilization and control actions. Any immobilization attempt, whether successful or unsuccessful, must be recorded to maintain a complete record of drug use. Forms will be kept in the Resource Management files.

FIRST CAPTURE/CAPT

BEAR CAPTURE RECORD-DENA

PUNCH TATTOO HERE:
 BEARCART FRP Rev 5/00

Computerized by: _____ Tracking form: Y N

Date: _____

| | | | | | | | | | | | | | |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| BEAR ID # | YR | MO | DAY | L. TAG | R. TAG | SCARS | SEX | AGE | BASIS | MOM'S TAG # | CUBS | C. AGE | CUB TAGS |
| <input type="text"/> |
| Bear Species | | | | O. COLLAR | N. COLLAR | HEAD | NECK | FREQ. | SERIAL # | MOD | NEXT CAPT | | |
| <input type="text"/> | | | | <input type="text"/> |
| Capture location: | | | | <input type="text"/> | | | | | | | | | |
| # Hits: | | | | <input type="text"/> | | | | | | | | | |
| # Misses: | | | | <input type="text"/> | | | | | | | | | |
| Air Temperature: | | | | <input type="text"/> | | | | | | | | | |

| | | | | | | | | | |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Chase begins | 1st hit | 1st effect | Animal down | Handling finished | Sedated by: | Pilot: | Crew: | Observation | Aircraft and Crew |
| <input type="text"/> |

| | | | | |
|-------------------------|--------------------------|-----------------------------|----------------------|----------------------|
| VULVA COLOR & CONDITION | PELAGE COLOR & CONDITION | BLOOD: | TOOTH | EAR PLUG |
| <input type="text"/> | <input type="text"/> | Red <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> | Green <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> | Purple <input type="text"/> | <input type="text"/> | <input type="text"/> |

| | | | | | | |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| BODY COND | ACT WT. | RESIST. | SNOUT/VENT PATH | MOVE | -%FAT | HAIR |
| <input type="text"/> |

| | | | | |
|----------------------|----------------------|----------------------|----------------------|----------------------|
| PULSE | RESP. | TEMP. | TIME | LA-200 |
| <input type="text"/> |

| | | | |
|----------------------|----------------------|----------------------|----------------------|
| IMMOB DRUG | CONCENTRATION(mg/ml) | METHOD | COMMENTS |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

| | | | |
|----------------------|----------------------|----------------------|----------------------|
| TARE: 3.0 No Collar | 3.5-500 | 4.0-600 | 4.5-GPS |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

PHOTOS: Roll Frames

CHECKLIST: Magnet, collar tightened, teeth, checked for old marks, condition of old tags, photo, darts, tattoo, antibiotic, companions

COMMENTS(scars, injuries, siblings, ectoparasites, etc marks, etc.):

1. _____

2. _____

3. _____

4. _____

5. _____

FLUO if first air drug use including images (if available)

DENALI NATIONAL PARK AND PRESERVE BEAR MANAGEMENT

CONTROL ACTION

BIMS Data Base Record #:

Date

Time

Location (include UTM):

Description of Bears:

People Directly Involved:

Describe the initial situation:

Type of Action (circle): Hazing Aversive Conditioning Translocation Euthanasia

| | # Hits | # Miss | # Unknown | Distance |
|----------------|--------|--------|-----------|----------|
| Cracker Shell | | | | |
| Rubber Slug | | | | |
| Bean Bag Round | | | | |
| Rifled Slug | | | | |
| Pepper Spray | | | | |
| Paint Pellet | | | | |
| Other | | | | |

Describe control action and bear's reaction:

BIMS Record # of previous control actions involving this bear(s):

Did the bear(s) return to the area after this control action? Y N

BIMS Record #(s) of subsequent control actions involving this bear(s):

Appendix H. Closure Procedure

PUBLIC USE CLOSURES RELATED TO RESOURCE CONDITIONS

Revised July 8, 2003

Introduction

Title 36, Code of Federal Regulations, Part 1.5 authorizes the Park Superintendent to establish public use closures in the interest of maintaining public health and safety, protecting environmental and scenic values, and protecting natural and cultural resources. Within the context of natural and cultural resources preservation and natural hazards management this closure authority most often extends to the following situations:

- Wildland Fires
- Hydrogeologic Events such as floods, mud/rockslides or earthquakes
- Severe Storms
- Wildlife Activity such as den/nest sites, prey kill sites, or areas near potentially hazardous animals

It should be noted that this is not a complete list of circumstances that can determine the establishment of a closure or use limit.

Closures and use limits are generally categorized as permanent or non-permanent. The primary distinguishing feature between the two is the anticipated duration of the use limit. **This directive deals solely with non-permanent closures and is separated into sections dealing with EMERGENCY and TEMPORARY closures.**

EMERGENCY CLOSURES

Emergency situations are recognized to immediately threaten public health and safety and will not last longer than 30 days. These closures may not be extended.

Recommendations for emergency closures related to resource conditions are expected to originate from field rangers and field resource management staff.

Procedures:

1. Determine that a closure is necessary. **DO NOT** proceed to implement a closure on hearsay.
2. Field rangers should make a reasonable attempt to contact their Subdistrict Ranger and field resource management staff should make a reasonable attempt to contact the Wildlife Biologist or their supervisor. Supervisory individuals will make recommendations on how the closure will be designed, implemented and terminated. Supervisory individuals will then

contact the Superintendent or acting superintendent for approval (and signature). The Communication Center will maintain a schedule of who has acting Superintendent authority during the Superintendent's absence.

Normally these contacts would not be made between 10PM and 7AM. If, however, the circumstances are serious enough, contacts should be made at any hour at the discretion of the field staff.

3. If the Subdistrict Ranger and/or the Wildlife Biologist are not available, field employees will contact the Superintendent and or the Acting Superintendent and make the recommendation for emergency closure. The Superintendent or Acting Superintendent will make the determination that a closure is needed. **If no contacts can be made (Comm. Center closed or no radio contact) and field staff determines the closure is necessary for human safety, proceed with signing the closure. Field staff will make the appropriate closure at the earliest opportunity.**

4. Once the Superintendent or Acting Superintendent approves a closure, notify the Communication Center. Be prepared to provide the following information: requestor, place name for the closure (assigned by the field staff), purpose and justification, location, and description of the perimeter. A map will be prepared and provided to the Communication Center as soon as possible after the determination to implement a closure.

5. The Communication Center will be responsible for assigning a closure number, preparing a closure notice, and advising all parties identified on the Notification List below.

6. Proceed with the closure by posting the appropriate signs.

7. Prepare a written Case Incident Report Form (SF-344), and have the Superintendent or his designee sign it. Then process it with the Communication Center. Include a map or diagram of the closed area and source point (kill site, etc.). Case Incident Reports should follow the format provided below.

8. Immediately following receipt of the Case Incident Report, the Communication Center will forward it to the Superintendent and the Chief Ranger.

9. The Wildlife Biologist and/or the Field Ranger will coordinate the monitoring and subsequent opening of the closure. Determination of this responsibility will be made during Step 2 above.

10. Openings (See Opening Procedures below)

TEMPORARY CLOSURES (These closures are non-emergency in nature)

Non-emergency situations do not pose an immediate threat to public health or safety but focus on preservation of park resources or may be implemented to expedite park operations. These closures will not last longer than 12 months and may not be extended.

Recommendations for non-emergency closures related to resource conditions are generally expected to originate from District and Subdistrict Rangers, Maintenance Foremen, Division Chiefs, and employees within the Center for Resources, Science and Learning. On occasion, cooperating investigators may submit closure proposals.

Procedures:

1. Contact the Wildlife Biologist prior to preparing a recommendation to avoid duplication of effort.
2. Recommendations for all non-emergency wildlife related closures are to be submitted to Wildlife Biologist in writing.

The written recommendation will be submitted on a Case Incident Report Form. Include a map or diagram of the closed area and source point if possible (fox den, etc.). Case Incident Reports should follow the format depicted below. Please be specific regarding the geographic locations and the justification for the action. The originator is responsible for assigning a place name to the closure recommendation and for receiving a Closure Number from the Communication Center.

3. Recommendations will be forwarded to the Director, Center for Resources, Science and Learning who will submit them to the Superintendent (copy to the Chief Ranger) for consideration and signature.
4. If the Superintendent concurs, the signed Case Incident Report will be forwarded to the Communication Center. This report will include maps and/or geographic descriptions of the area(s) to be closed. The Communication Center will forward a copy of this report to the Director, Center for Resources, Science, and Learning and the Wildlife Biologist.
5. The Communication Center will be responsible for advising all parties identified on the Notification List. The Wildlife Biologist will be responsible for updating the master map, and for making the map available to parties on the Notification List.
6. If the Superintendent rejects the recommendation, the Director, Center for Resources, Science and Learning will be promptly advised. The Wildlife Biologist and staff initiating the closure proposal will also be promptly notified.
7. The Ranger Activities Division and the Wildlife Biologist will coordinate posting the area with appropriate signs per maps received from the Communication Center's signed copy of the Case Incident Report. It is important to realize that maps associated with original recommendations may not reflect what the Superintendent eventually agrees to. Consult final determination documentation. A minimum requirement / tool analysis for any signs posted within the Wilderness is required.

8. The Wildlife Biologist and the Ranger Activities Division will coordinate the monitoring and subsequent opening of the closure, providing regular feedback throughout the process. The ultimate responsibility for monitoring will rest with the Wildlife Biologist.

9. Openings (See Opening Procedures below)

OPENINGS

Openings of Emergency Closures are made only after a site has been physically inspected.

If employees are entering a potentially hazardous closed area, they are to advise the Communication Center of their entry and exit.

If a kill site is involved, two employees armed with shotgun(s) will be involved in the inspection.

Procedures:

1. Before entering a closure, individuals should confer with the Wildlife Biologist. The purpose of this consultation is to determine the appropriateness of the opening and whether additional information is required from the closure area.
2. Before opening a closure (and removing closure signs), the Wildlife Biologist will make a reasonable attempt to obtain oral or written concurrence from the Superintendent or Acting Superintendent. The communication center can facilitate this contact. If this concurrence cannot be obtained in advance and field conditions warrant, proceed with the opening.
3. Notify the Communication Center of all openings. The Communication Center will be responsible for advising all parties identified on the Notification List.
4. Oral recommendations for lifting closures are to be followed-up, as soon as possible, with a written Case Incident Report Form and processed with the Communication Center. These reports should follow the format provided for a closure opening recommendation. The Communication Center will forward a copy of this report to the Wildlife Biologist.
5. The inspecting party will be primarily responsible for removal of all signing. Coordination should occur between the Center for Resources, Science and Learning and the Ranger Activities Division to assure efficiency in sign removal.

Status of Closures

The Communication Center will maintain a running log and complete file of all closures and openings. A Closure Update Report will be completed by the Communication Center and distributed to all parties on the Notification List when closures change.

Backcountry Unit Maps

A Backcountry Unit Map, indicating minimum closure areas, will be prepared by 15 April of each year. The map legend will note in bold letters that only those areas so outlined and shaded are closed. Closure boundaries will be printed in such a fashion that they will not be confused with other features on the map. This map will also serve as the Backcountry Unit Map and will include narrative pointers regarding closures and travel around them. This map will serve as a master copy and will be maintained as part of the geographic information system in the Center for Resources, Science and Learning. The master will be updated as closure boundaries change throughout the course of the season. Copies will be made of the master, as updates occur, and will be supplied to all backcountry users. The Wildlife Biologist is responsible for original map preparation and subsequent closure boundary updates. This map will be available to the Backcountry Desk at any time and will be distributed to all parties on the Closure Notification List when closures change.

USGS Topographic Maps

When documentation for emergency closures or justifications for other temporary closures is prepared it should include a map (1:63,360) depicting closure boundaries. Once final closure determinations are made they should include similar maps (1:63,360) with approved closure perimeters. Copies of these maps will be maintained in the Communication Center, Center for Resources, Science, and Learning Files, and the Backcountry Desk for reference purposes.

A master set of these maps will be maintained in the Center for Resources, Science and Learning, which depict details of the boundary lines of each closure area. These masters will be updated as closure boundaries change throughout the course of the season and will be distributed to all parties on the Closure Notification List as closures change. Backcountry staff will be encouraged to have backcountry users consult the maps for familiarity with closure boundaries. These maps will also form the basis for field deployment of closure signs. The Wildlife Biologist is responsible for original map preparation and subsequent closure boundary updates.

Delegations of Authority

In the absence of Subdistrict Rangers, District Rangers, the Chief Ranger, the Wildlife Biologist, the Wildlife Biologist, the Director Center for Resources, Science, and Learning, the Assistant Superintendent, or the Superintendent, those individuals who have delegated authority to act on their behalf will make decisions regarding closures and will take actions accordingly.

I concur with the above recommendations on implementing temporary and emergency closures for wildlife related resource conditions:

Superintendent

Date

Notification list

Persons and places to notify when a closure is put into effect

Upon notification the communication center will distribute the closure information to the following:

Public Information Officer
Backcountry Desk at Visitor Center
Half sheet notice is posted in headquarters at mailboxes
Superintendent's Secretary
Wildlife Biologist
East District L.E. Rangers
West District L.E. Rangers
Interpretation staff conducting programs in or near affected areas
Morning report (via radio at 10am, reports are also distributed)
Shuttle bus dispatcher
ARAMARK transportation (tundra wildlife tours)
Kantishna businesses (if appropriate)

A closure update sheet will be distributed as closures change. This sheet should be posted and accessible to all employees.

CASE INCIDENT REPORT SF-344
FORMAT FOR CLOSURE & OPENING RECOMMENDATION

FORM NO. 10-344
 (Rev. 3-73)

U.S. DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
 SUPPLEMENTARY CASE/INCIDENT RECORD

| | | |
|--|----------------------|---------------------------------------|
| ORGANIZATION (PARK) NAME Denali National Park and Preserve | | CASE/INCIDENT NUMBER 030019 |
| LOCATION OF INCIDENT Highway Pass | | DATE OF INCIDENT 6/12/03 |
| NATURE OF INCIDENT Jaeger Nest | | |
| COMPLAINANT'S NAME | COMPLAINANTS ADDRESS | |

RESULTS OF INVESTIGATION

EFFECTIVE DATE: 6/12/03

EFFECTIVE TIME: 08:30 HRS

CLOSURE NAME: Long-tailed Jaeger Nest

CLOSURE NUMBER: 012

JUSTIFICATION: This area includes an active Long-tailed Jaeger nest in a high visitor-use area. The nest is visible from the road and highly accessible. A Long-tailed Jaeger nest is more conspicuous than other nests such as Ptarmigan due to their active behavior around the nest. Ptarmigan and other species conceal their nests whereas Long-tailed Jaegers nest out in the open. Long-tailed Jaegers are a high profile species that photographers search out. Long-tailed Jaegers are relatively uncommon in Denali and unlike Ptarmigan are very sensitive to human disturbance. There is evidence to suggest that the more Long-tailed Jaegers and other ground nesting birds are disturbed the more likely they are to abandon their nests. Multiple visits to this nesting site leading to abandonment of the nest could cause exposure of the eggs to the elements and increased likelihood of predation (pers. comm. Carol McIntyre). The nest is on a south facing slope and long term exposure to the sun could be detrimental. There was an incident in the past with Professional Photographers in this same area when the NPS won a court case over intentional disturbance to wildlife (Long-tailed Jaeger chicks). This area will be closed to public use temporarily until the Long-tailed Jaeger young fledge from the nest or earlier if the nest fails. Closing this area does not significantly alter public use patterns of the Park or have a significant negative impact on visitor use and experience. Less restrictive measures to protect this nest will not suffice due to lack of constant observation and contact by Park staff to visitors and professional photographers in this area. Signing the area will be the most effective way to protect the nest.

LOCATION: Mile 58.7 approximately 150 meters from the road on the North side.
 N 63.47800° W 150.14503°

Closing a minimum of 300 feet radius is designed to match the terrain and accessibility of the area.

POST SIGNS: Wildlife Management Technicians

NOTIFY COMM. CENTER: Wildlife Management Technicians

OTHER COMMENTS: Authority for temporary closures is found in Title 36, Code of Federal Regulations, Section 1.5. The area is posted with appropriate signs as prescribed in Title 36, CFR, Section 1.5.

| | |
|-----------------------------------|----------------------------------|
| SUBMITTED BY (SIGNATURE AND DATE) | APPROVED BY (SIGNATURE AND DATE) |
|-----------------------------------|----------------------------------|

FORM NO. 10-344
(Rev. 3-73)

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
SUPPLEMENTARY CASE/INCIDENT RECORD

| | |
|---|--------------------------------|
| ORGANIZATION (PARK) NAME Denali National Park and Preserve | CASE/INCIDENT NUMBER 030019 |
| LOCATION OF INCIDENT South of Highway Pass, Unit 11 | DATE OF INCIDENT 7/03/03 |

NATURE OF INCIDENT
Temporary (Emergency) Wildlife Closure OPENING

| | |
|--------------------|----------------------|
| COMPLAINANT'S NAME | COMPLAINANTS ADDRESS |
|--------------------|----------------------|

RESULTS OF INVESTIGATION

EFFECTIVE DATE: 7/07/03

EFFECTIVE TIME: 0800

CLOSURE NAME: Highway Pass bear kill

CLOSURE NUMBER: 011

JUSTIFICATION: The area was observed by Wildlife Management Technicians and it was determined that it was safe for visitors. The kill site mound was gone and the large dark colored bear that was on kill on 7/02/03 was observed approximately 1500 meters south of site grazing and resting.

REMOVE SIGNS: Wildlife Management Technicians

NOTIFY COMM. CENTER: Wildlife Management Technicians

OTHER COMMENTS: Authority for temporary closures is found in Title 36, Code of Federal Regulations, Section 1.5. The area is posted with appropriate signs as prescribed in Title 36, CFR, Section 1.5.

| | |
|-----------------------------------|----------------------------------|
| SUBMITTED BY (SIGNATURE AND DATE) | APPROVED BY (SIGNATURE AND DATE) |
|-----------------------------------|----------------------------------|

Wildlife Closure Spreadsheet

| Closure Number | Date Closed | Closed By | Unit # | Reason Closed | Location Description | Date Opened | Opened By |
|----------------|-------------|------------------|----------|-----------------------------|---|-------------|------------------|
| 1 | 6/7/2003 | Dave Schirokauer | | Historic Wolf denning area | Jenny Creek | | |
| 2 | 5/1/2003 | Dave Schirokauer | | Historic Wolf denning area | Teklanika River | | |
| 3 | 5/7/2003 | Dave Schirokauer | 4,5,7,32 | Historic wolf denning areas | Savage Hogbacks, Sanctuary Ridge, East Fork, Toklat | 5/22/2003 | Dave Schirokauer |
| 4 | 5/23/2003 | Dave Schirokauer | 8 | gryfalcon nest | marmot rock | | |
| 5 | 5/23/2003 | Dave Schirokauer | 34 | GOLDEN EAGLE NEST | Eilson bluffs N of park rd. mil 67.6 to 67.8 | | |
| 6 | 5/23/2003 | Dave Schirokauer | 29 | bear kill | unit 29 - 1.5 mile nw of Teklanika campground | 5/25/2003 | Eric Bindseil |
| 7 | 5/27/2003 | Dave Schirokauer | 39 | Wolf Den | Toklat Island | | |
| 8 | 6/8/2003 | Eric Bindseil | 15 | Nesting loons | east end of wonder lake near boat launch | | |
| 9 | 6/7/2003 | Dave Schirokauer | 34 | Gryfalcon Nest | Eielson bluffs | | |
| 10 | 6/7/2003 | Dave Schirokauer | 15 | nesting terns | Southern end of Wonder Lake | | |

Appendix I. Training Requirements

Thorough training in aversive conditioning techniques, the use of firearms, immobilization agents, free-darting, and aerial capture is mandatory before employees are permitted to participate in the respective activity.

Firearms

The use of firearms for bear management purposes shall follow guidelines as listed in NPS-44, Resource Management Qualifications. The primary purpose for issuance of a weapon to Bear Management personnel is for protection of the visitor in case of animal attack, or for disposal of animals. Secondly, the weapon is available for personal protection in case of animal attack, during management actions, and patrolling of areas closed due to bear problems. Unless otherwise stated in this plan, on lands within the boundaries of Denali National Park and Preserve, a bear will be killed only if it presents a critical and immediate threat to human safety and after all other means of deterrence have been exhausted.

Firearms training courses for natural resource management purposes include the following components:

Pistol Course - This course is required only if the employee will be using a pistol during the performance of his/her duties. The course is fired at a 12 inch diameter scoring ring. Any hit inside the 12 inch ring scores one point; any hit outside the 12 inch ring is scored as zero. A minimum score of 80% is required for qualification.

| | | | |
|----------|------------------|----------|----------------------|
| 3 yards | offhand/standing | 6 rounds | 15 second time limit |
| 7 yards | offhand/standing | 6 rounds | 20 second time limit |
| 15 yards | offhand/standing | 6 rounds | 25 second time limit |

Shotgun Course - This course is fired at a 12 inch diameter scoring ring. Any hit inside the ring scores as one point per hit; a hit outside the 12 inch ring is scored as zero. A minimum score of 80% is required for qualification.

| | | | | |
|----------|-------------------|-----------|----------|----------------------|
| 7 yards | standing shoulder | buckshot* | 2 rounds | 6 second time limit |
| 15 yards | standing shoulder | buckshot* | 2 rounds | 8 second time limit |
| 15 yards | standing shoulder | slug | 4 rounds | 16 second time limit |

* For shotgun familiarization purposes only. Buckshot is not used for any bear management activity.

Immobilization

Ground Based Dart Capture

The following minimum qualifications are required for employees immobilizing bears in a ground based free-darting situation:

1. Successful completion of a 24 hour wildlife immobilization class covering the following topics: drug pharmacology, wildlife reactions to drugs, human and wildlife safety, wildlife handling ethics, monitoring immobilized animals, loading of darts, dosage calculation, drug handling, and equipment familiarization.
2. Field experience participating in supervised captures/immobilization (amount of time to be determined by the overseeing supervisor based on the trainee's prior experience and aptitude).
3. Current CPR certification
4. Successful annual qualification with immobilization rifles. A minimum of 80% proficiency is required on a course specifically designed for capture weapons used within Denali that includes:

This course of fire is to shoot five 4-ml. darts from 10 and 15 yards at a 12 inch diameter scoring ring. Any hit inside the 12 inch ring scores as one point; any hit outside the 12 inch ring is scored as zero. A minimum score of 80% is required for qualification.

| | | | |
|----------|------------------|----------|----------|
| 10 yards | offhand/standing | 5 rounds | 4cc dart |
| 15 yards | offhand/standing | 5 rounds | 4cc dart |

Aerial Capture

In addition to the qualifications mentioned above for ground based darting, employees involved in the aerial capture of animals must meet the following minimum qualifications:

1. 8 hours of aircraft safety training, OAS-B3 or equivalent (recurring every three years).
2. Current on-the-job capture experience.
3. 40 hours of Aerial Capture, Eradication, and Tagging of Animals (ACETA) operational and aircraft safety classroom training.
4. Firearms certification (recurring every year).
5. Gunners must complete an operational airborne instruction and check ride as part of the 40 hour ACETA course.

Appendix J. Criteria and Guidelines for Handling and Immobilizing Bears

Bears will be captured and handled only for management and research purposes. Valid causes for handling include marking potential problem bears, marking bears for identification by researchers, relocation, destruction, and acquisition of biological samples and measurements.

Fully trained staff (Appendix I) will direct all handling and immobilization operations. This is to help insure proper use of the equipment and drugs, safety for both the bear and its handlers, and provide uniformity in records and biological measurements. The Wildlife Biologist will insure that either formal or informal annual training sessions (Appendix I) are conducted to train Wildlife Branch staff in the correct use of culvert traps, drugs, and immobilization equipment. Staff will be trained to the highest standards on bear handling procedures, biological measurement and sample acquisition, and how to properly complete handling reports. This training will normally be coordinated by the Wildlife Biologist. Highly experienced staff members, specialists, or veterinarians trained and experienced in handling bears will conduct this training.

A licensed veterinarian will be retained for prescription and consultation on drugs, to review and provide advice on animal handling techniques, to provide training, and for consultation on veterinary problems. No tools or techniques that are not humane or cause unnecessary pain will be used to handle bears.

Capture/Immobilization Methods

1. Aerial Capture

Bear captures for research purposes occur primarily during May and September when bears are out of the den, leaves are off the shrubs to increase visibility, and temperatures are fairly cool. Bears may be captured at any time while out of the den for management purposes. Bears are located by intensive survey with a PA-18 Supercub or by locating previously radio-collared individuals. All capture efforts use a Hughes 500, Bell 206 Jet Ranger, or Robinson R-44 helicopter as a darting platform and to transport the processing crew, consisting of a gunner and 1 or 2 assistants. A PA-18 Supercub is used to direct the helicopter to the bear for capture, to monitor darted bears until drug induction, and to check on bears captured on previous days. Operations and aircraft specifications will be within OAS - ACETA guidelines (attached).

2. Ground Capture with Culvert Traps

In areas accessible by roads, the culvert trap is the principal device to capture bears. It will be set in the evening after visitor activity slows, and the door will be closed in the morning before 8:30 a.m. Adequate blocking will be used to insure that the trap is neither a safety hazard nor so unstable as to discourage a wary bear. Traps must be marked

"Danger" in red letters on both sides. An Emergency Closure (appendix H) will be implemented for the area around the trap.

Traps will be painted a light color to reflect heat. In hot weather, trapped bears will be moved to a cool, shaded site away from campgrounds or other public use areas; bears should be hosed down with water periodically during warm weather. In all weather, clean hay may be placed on trap floors to provide insulation from metal.

Trapped bears requiring immobilization will be drugged within the trap by jab stick or blow gun. A designated employee will be responsible for a trapped animal at all times until released. Normally, the person who sets a bear trap is responsible for the animal's safety until a certified bear handler is on scene. The handler is responsible until it is safe to transfer the responsibility to other personnel. That person is then responsible for the bear until it is released.

Bears will not be kept in traps longer than 24 hours unless extraordinary circumstances prevent proper disposition within that limit. The Wildlife Biologist will make this determination, provide instructions for sustained care of the bear, and advise the Superintendent of the bear's status.

When sows with cubs are trapped and the cubs remain outside the trap, or when cubs are trapped without mothers, every attempt will be made to reunite the mother with her cub(s) as soon as practical. If unsuccessful and the mother is not a problem bear, then she will be released where captured as soon as possible after tagging and gathering biological statistics. If the mother bear is a problem bear to be relocated and the cubs cannot be caught within 24 hours, then the Wildlife Biologist will make the decision whether: (1) the mother is released in another effort to capture the whole group; (2) the mother is held beyond 24 hours and the effort to capture the cubs is continued; or (3) the cubs are abandoned, particularly if old enough to wean.

3. Capturing a free ranging bear with a dart gun from the ground.

Drugs, administered by use of a drug-injecting dart fired by ground based personnel, is a very rarely used alternative. It is not considered safe for the staff involved or the bear and must be approved on a case by case basis by the Assistant Superintendent for Resources, Science, and Learning.

Use of Immobilizing Drugs

All bears are captured using Telazol (tiletamine and zolazepam; 250 mg/ml) delivered in projectile syringes fired from a syringe rifle. We attempt dosages of 7-10 mg/kg of grizzly bear body mass and 5-8 mg/kg of black bear body mass. Three to seven ml darts (dependent on species and sex of bear) with 1.9 cm (3/4 in) barbed needles fired with "Low" propellant charges ("brown wads") are used for spring captures. During spring captures the rump is the muscle mass of choice for injection. Longer, 3.8 cm (1.5 in) needles with 4-7 ml darts are used in fall for subadults of both sexes and adult females, respectively. Adult grizzly males

are not routinely captured during fall, but when necessary receive 2 consecutive injections totaling 12 ml of Telazol. Extensive fat deposits during fall require injection into a shoulder.

Once bears are immobilized, body temperatures are determined as soon as practical with a rectal thermometer and monitored continually. Bears with body temperatures higher than 40.6 °C (105 °F) are cooled with water and/or with snow packed in the groin, along the animal's belly, and on foot pads. Cooling continues until rectal temperatures are below the 40.6 °C threshold. Drugged bear will be monitored for respiratory difficulties, convulsions, eye reflex, cyanosis, evidence of premature recovery from the drug, and any other potential problems which, if undetected, could be hazardous for either the bear or its workers.

In the event an animal must be euthanized due to a capture related injury or for management purposes, the guideline established by the American Veterinary Medical Association (2000) will be followed.

Bears that are incompletely immobilized or that recover during handling are given additional 125 to 250 mg doses of Telazol to maintain appropriate anesthesia.

Immobilized bears are left in a safe location (e.g. away from open water or steep slopes) and allowed to recover from anesthesia undisturbed. All captured bears are located within 1 or 2 days of capture to determine that they have recovered from the immobilization and family groups are reunited.

Handling Immobilizing Agents

Scheduled and prescription drugs are obtained and may only be dispensed by the Park's Drug Practitioner. Drugs are stored in a safe. Drugs may be signed out to personnel with potential need for immobilizing bears and who have either attended the Parks' course in immobilization or received equivalent training and/or experience and are deemed competent by the Parks' Drug Practitioner. The Drug Practitioner will ensure that records are kept of drug inventory, use, and distribution to field areas. Each recipient of drugs will be responsible to see that records of drug use are sent to the Park's Drug Practitioner monthly. Unused (mixed but disposed of) and drugs with lost darts will be documented by the Drug Practitioner after each capture session. Drug accountability is the responsibility of the Park's Drug Practitioner who will maintain records on all drug use and distribution.

Tagging/Gathering Biological Statistics

Bears are radio-collared and fitted with plastic eartags. The small tissue sample removed from the ear during tagging will be retained for future genetic analysis. Radio-collars consist of hermetically sealed radio-transmitters attached to collars made of 5- (for VHF collars) or 6-cm-wide (for GPS collars) reinforced machine belting, and weigh 500-1,000 g (VHF) or 1,700 g (GPS). Transmitters are motion-sensitive, transmitting at 75-100

bpm when active and 45-60 bpm if motionless for 4 hours, to indicate mortality. Expected transmitting life of this configuration is 3 years at the active pulse rate.

Each bear is weighed and physical measurements are taken. Percent body fat is estimated using bioelectrical impedance analysis. Bears are examined to determine overall body condition and the presence of injuries. Their teeth are examined to determine the extent of wear and breakage and to estimate their age. A first premolar is extracted during a bear's first capture and sectioned for age determination. Breeding status is evaluated by teat and vulva condition and the presence of cubs. A 60 ml blood sample is drawn from the femoral artery using a 20-ga needle 2.54 cm in length for dietary, disease, and genetics analyses. Whenever possible, biological and drug reaction data will be collected on all bears handled using a standardized bear field data form, see Appendix G. Minimum biological data are sex, weight (estimated or measured), girth, total length, reproductive condition, presence of external parasites, pelage color, injuries, and estimated age.

Release/Relocation

Immobilized bears are left in a safe location (e.g. away from open water or steep slopes) and allowed to recover from anesthesia undisturbed. All bears captured are located within 1 or 2 days of capture to determine that they have recovered from the immobilization and family groups are reunited.

Trapped and drugged bears will be attended or held in culvert traps until they appear fully capable of defending themselves from other bears and otherwise functioning normally in the natural environment.

Non-problem bears will be released within 0.5 kilometer of where they were captured. Every effort will be made to avoid releasing bears in view of the general public, unless the release is part of an interpretive function approved by the Superintendent. Problem bear may on occasion also be released on site and aversively conditioned as part of an experimental aversive conditioning program.

Bear relocation will not be used as a long-term solution to human/bear problems. This is not considered effective or an ecologically sound bear management strategy.

References:

AVMA 2000, 2000 Report of the AVMA panel on euthanasia. Journal of the American Veterinary Medical Association, Vol. 218, No. 5.

Updated 9/2000

Bear Capture Kit Inventory

- _ 8 dart tails
- _ 8 plungers
- _ 8 needles (short, medium, long)
- _ 16 dart tubes (4/3cc, 4/4cc, 4/5cc, 4/7cc)
- _ 1 bottle plunger lube
- _ 1 film canister Vaseline
- _ 1 film canister 4-10 cc internal charges
- _ 1 film canister 1-3 cc internal charges
- _ 1 film canister green charges (Low)
- _ 1 film canister yellow charges (Medium)
- _ 1 film canister brown charges (Very Low)
- _ 1 Positioner
- _ 3 Gas exchangers
- _ 1 Dart cover or Cork
- _ 2 Blood kits (Vacutainer, needles, heparinized & nonadditive tubes)
- _ 4 tooth envelopes
- _ 4 5 cc syringes
- _ 4 10 cc syringes
- _ 6 20 gauge needles
- _ 6 10 gauge needles
- _ 1 book of matches
- _ 1 sharps container
- _ 1 thermometer with extra battery
- _ 1 tube eye ointment
- _ 1 roll electrical tape
- _ 1 pair needle nose pliers
- _ 1 tooth elevator
- _ 2 bottles distilled/sterile water
- _ 1 film canister nitrofurizone or antibiotic ointment
- _ 1 measuring tape
- _ 4 pairs latex gloves
- _ 1 tube of dessicant
- _ Pens and Pencils
- _ Permanent marker
- _ Alcohol Swabs
- _ 4 pairs of Ear Tags
- _ Hole Punch
- _ Tagging pliers
- _ Break-away collar leather
- _ Collar brackets and extra nuts
- _ Nut driver
- _ Knife
- _ Small crescent wrench
- _ 1 Mouth expander
- _ 1 pair large calipers
- _ Ziplocks and Trash Bags
- _ Park Map
- _ 1 Telazol dosage and safety card
- _ 1 Measurement standards card
- _ 4 Capture data forms

Other Equipment to Supplement Kit:

- _ 1 Radio Collar and extra magnet
- _ 1 Large Tarp
- _ 1 Scale
- _ 1 Dart Gun
- _ 1 Pole syringe
- _ 1 Gun cleaning rod

Measurement Standards

-Collar should be 1-1.5 cm larger than widest head circumference

Skull Length: tip of nose to superior nuchal line

Skull Width: Most distant points of zygomatic arch

Girth: Immediately behind the forelimbs, averaging max and min from inhale to exhale

Total Length: tip of nose to end of last tail vertebrae

Height at Shoulder: Articulation of wrist to distal end of scapula

Female Pectoral Nipples: width and height of both pectoral nipples (mm)

Head: Girth of widest point

Neck: Girth of neck directly behind skull

Fore foot width: width of pad

Fore foot length: from base of pad to top of toe pad

Total fore foot length: from base of pad to end of claw

Hind foot width: width of pad

Hind foot length: from base of pad to top of toe pad

Total hind foot length: from base of pad to end of claw

Tag Scars: N = no, L = left ear, R = right ear, B = both

Tooth: R = right upper first premolar, L = left u.f.p.

Lactating: Yes or No

Cub Age: C = Spring, Y = yearling, 2 = 2yrs, 3 = 3yrs

Body Condition: F = Fat, G = Good, I = Intermediate, P = Poor, E = Emaciated

Blood: Red or Purple

Telazol Specifics

- Mix 5ml sterile water with 3 500mg (1,500mg) bottles Telazol
- Results in 6 ml final drug: lasts at room temp for 4 days
- Concentration is 250 mg/ml

Dart Gun Set-up:

- external charge placed at 6:00
- Brown = very low range
- Green = low range
- Yellow = moderate range

Standard doses for bears:

- Small 150-300 lbs. = 3 ml
- Adult Female 200-300 lbs. = 5ml
- Adult Male 400 lbs + = 7 ml
- Spring cubs/small yearlings = ½ ml spring to 2 ml fall

Injection site:

- Intramuscular = 6-8 minutes
- Subcutaneous = 15-30 minutes
- Fat = not good & decreases dosage

Telazol is a Central Nervous System immobilant:

- Cover eyes and use eye ointment
- Keep from facing the sun
- Position head downhill in case of vomiting
- Body Temp avg. 101°F
106°-107°F is Dangerous!
Add water to groin to lower temp
- Prevent Cubs from nursing on drugged mother, sternal recumbent placement
- Additional doses should be less than original dose
- Total drugs given should not double recommended dose

OAS-12 (3/02)

DEPARTMENT OF THE INTERIOR - OFFICE OF AIRCRAFT SERVICES
AIRCRAFT RENTAL AGREEMENT PROVISIONS: SUPPLEMENT NO. 4
SPECIAL USE – HELICOPTER
AERIAL CAPTURE, ERADICATION AND TAGGING OF ANIMALS

Definitions

ACETA (Aerial Capture, Eradication and Tagging of Animals) As used in this supplement, ACETA is defined as operations conducted from a helicopter, i.e.: Eradication (elimination by use of a firearm), marking (use of paint ball gun or similar device), Tagging (Hand held net gun, Airframe mounted net gun, or darting).

B8.4.1 Certification.

The aircraft and the pilot must be carded for the appropriate operations under the Department of Interior ACETA Aerial Capture, Eradication, and Tagging of Animals) Handbook (351 DM 2 - 351 DM 3).

B8.4.2 Flight Operations.

B8.4.2.1 A restriction while carrying weapons. While conducting ACETA operations, the designated gunner may carry aboard the aircraft and operate appropriate weapon(s) for the accomplishment of the mission. The weapon shall not be loaded (in the chamber) or cocked unless the muzzle is outside and pointed away from the aircraft.

B8.4.2.2 VFR Minimum Altitudes. While conducting ACETA operations over sparsely populated areas, the aircraft may be operated below 500 feet above the surface in compliance with FAR 91.119.

B8.4.3 Personnel Requirements.

B8.4.3.1 Pilot Requirements. Pilots shall have logged the following hours as PIC in addition to the general requirements of the ARA.

B8.4.3.1.1 Helicopter.

B8.4.3.1.1.1 100 hours in class size (small, medium, and large as applicable).

B8.4.3.1.1.2 200 hours, including 10 hours in the last 6 months, low-level flying over hazardous/mountainous terrain and operating from unimproved heli-spots at high-density altitudes. B8.4.3.1.1.3 50 hours experience as pilot for predator control hunting operations, or 200 hours experience in agriculture application type flying.

B8.4.3.1.1.4 Pilot Endorsements. The pilot will be endorsed for the specific mission requested i.e.: Handheld Net Gun, Airframe mounted Net Gun, Eradication (shotgun, rifle, etc:), Darting/tagging (dart gun, paint ball).

B8.4.3.2 All ACETA pilots must demonstrate the following:

B8.4.3.2.1 Positive flying safety attitudes and habits.

B8.4.3.2.2 Positive attitude regarding requirements and procedures for aerial hunting of predator animals.

B8.4.3.2.3 Emotional stability under the stress of low-level aircraft operations required for aerial hunting.

B8.4.3.2.4 Positive personality characteristics required to work and communicate effectively with field personnel and cooperating agencies.

B8.4.3.2.5 Knowledge of and/or willingness to learn predator habits and how to effectively and efficiently hunt them.

B8.4.3.2.6 Ability to identify and safely maintain effective airborne contact with the target animal.

B8.4.3.2.7 Willingness to work unusual hours and lodge at remote field locations.

B8.4.4 Personnel Protective Equipment (PPE).

B8.4.4.1 This is a special use activity and PPE is required. Aviator's flight helmet, consisting of a one-piece hard shell made of polycarbonate, Kevlar, carbon fiber, or fiberglass, must cover the top, sides (including the temple area and to below the ears), and the rear of the head. The helmet shall be equipped with a chinstrap and shall be appropriately adjusted for proper fit. Flight helmets for helicopter usage must conform to a national certifying agency standard, such as DOT, Snell-95, SFI, or an appropriate military standard, and be compatible with required avionics (see section B8.4.6.7). "Shorty" (David Clark style) helmets are not approved. Flight helmets currently meeting this requirement are the SPH-3, SPH-4, SPH-5, SPH- 4B, SPH-8, HGU-56 and HGU-84. Helmets designed for use in fixed wing aircraft do not provide adequate protection for helicopter occupants and are not approved for helicopter use.

B8.4.4.2 Pilots shall wear long-sleeved shirt and trousers (or long-sleeved flight suit) made of fire-resistant polyamide or aramid material or equal. Pilots shall wear boots made of all-leather uppers that come above the ankles and leather, polyamide or aramid gloves. The shirt, trousers, boots, and gloves shall overlap to prevent exposure to flash burns.

B8.4.5 Aircraft Requirements.

B8.4.5.1 A first aid kit containing items specified in Attachment 4 shall be furnished by the Vendor and carried aboard the aircraft on all flights.

B8.4.5.2 A survival kit containing items specified in Attachment 4 shall be furnished by the Vendor and carried aboard the aircraft on all flights.

B8.4.5.3 Shoulder harness/lap belts.

B8.4.5.3.1 Front seat occupants. Helicopters will have double-strap shoulder harness with self-locking inertia or locking reel and lap belt for pilot and gunner. Shoulder straps and lap belts will fasten with metal-to-metal, single point, quick-release mechanism. A rotary-type buckle, similar to Pacific Scientific "Saf-T-Matic", will be required on helicopters not equipped with an approved shooting door or window.

B8.4.5.3.2 Rear seat occupants with door on. Lap belts will fasten with metal-to-metal mechanism.

B8.4.5.3.3 Rear seat occupants without door. The gunner shall wear an OAS approved adjustable full-body harness equipped with a quick release system. A safety strap will be attached to the harness and the aircraft, at a location and in a manner approved by OAS. The OAS Division of Technical Services will establish requirements for specific aircraft types.

B8.4.5.3.4 If a shooting door is not installed, the aircraft shall be capable of flight with door(s) removed for shooting. (Not applicable for net guns attached to the aircraft exterior.)

B8.4.5.4 Tundra Boards or Snow Pads. (Mandatory in Alaska when the helicopter is not equipped with standard or emergency flotation gear or as noted in the aircraft order.)

B8.4.5.5 Dual controls are required for pilot performance evaluations. Dual controls shall be removed prior to use under this agreement.

B8.4.5.6 The following optional equipment and accessories are recommended for helicopters:

B8.4.5.6.1 High-skid landing gear.

B8.4.5.6.2 Personnel access step. Helicopters equipped with extended gear shall have a personnel access step to assure safe entrance and exit from each door of the helicopter. A section of external cargo rack may be utilized as a step by providing a clear space covered with nonskid material.

B8.4.5.6.3 Shooting door or window.

B8.4.5.6.4 Cabin heater and defogger.

B8.4.6 Avionics Requirements.

B8.4.6.1 General. The following systems shall be furnished, installed and maintained by the Vendor in accordance with the manufacturer's specifications and the installation and maintenance standards of Section B8.4.6.10.

B8.4.6.2 Communications systems.

B8.4.6.2.1 One automatic portable emergency locator (ELT/AP) or an automatic fixed/portable emergency locator (ELT AF/AP) meeting TSO-C91 or TSO-C91A shall be installed in the helicopter cabin in a conspicuously marked location that is easily accessible, and readily removable in the event of an accident. B8.4.6.2.2 An unidirectional ELT shall be installed with the "arrow" aimed 45 degrees downward from the normal forward "direction-of-flight" of the helicopter. If the primary antenna is a fixed type, a portable antenna shall be attached to the ELT unit.

B8.4.6.2.3 In lieu of the ELT requirement above, an automatic fixed emergency locator transmitter (ELT AF) meeting TSO-C91A or an ELT that requires tools to remove from the aircraft may be acceptable when a handheld portable ELT/EPIRB is furnished. The ELT/EPIRB shall be compact and easily carried by the PIC. A handheld ELT/EPIRB such as Emergency Beacon Corporation's model EBC-102 with telescoping antenna or Emergency Locator Products Corporation's model ELP-1000 meets this requirement.

B8.4.6.3 One VHF-AM aeronautical transceiver, operating in the 118.000 to 135.975 MHz band, with a minimum of 720 channels, in no greater than 25 KHz increments, and a minimum of 5 watts carrier output power, shall be installed in the aircraft.

B8.4.6.4 Provisions for Auxiliary VHF-FM (AUX-FM) Portable Radio.

B8.4.6.4.1 The vendor shall provide the necessary interface for installing and properly operating an Auxiliary VHF-FM Portable Radio through the aircraft's Audio Control Systems. The interface shall consist of the appropriate wiring from the Audio Control Systems which is terminated in a MS 3112E-12-10S type connector, mounted in a location convenient to the observer, and utilizing the following contact assignments:

Contact Designation Interface Functions

| | |
|---|---|
| A | Airframe Ground |
| B | Push-to-talk (isolated contact closure) |
| C | Push-to-talk (isolated contact closure) |
| D | Receiver audio low |
| E | Receiver audio high (Variable from 10 mW to 500mW, 8 ohms to 75 ohms) |
| F | Transmitter Microphone Low |
| G | Transmitter Microphone High |
| H | +14 VDC from aircraft avionics buss, 5 amp Type A circuit breaker. For 14V aircraft only! |
| J | +24 VDC from aircraft avionics buss, 5 amp Type A circuit breaker. For 28V aircraft only! |
| K | Spare contact |

B8.4.6.4.2 One weatherproof external broadband antenna covering the 150-174 MHz band, with associated RG-58A/U coaxial cable and connector, terminated in a bulkhead mounted female BNC connector convenient to the observer.

B8.4.6.4.3 Radio mounting facilities that comply with AC 43.13-2A, Chapters 1 and 2, shall be provided for the auxiliary radio for installation in the cockpit, with controls convenient to the pilot and observer. The auxiliary radio connector and antenna connector shall be so located that an 18-inch interconnecting cable may be utilized by the radio.

B8.4.6.4.4 The selector panel shall supply positive polarity microphone excitation voltage, from the aircraft DC power system through a suitable resistor network, to the aircraft microphone. A blocking capacitor shall be provided in the selector panel to prevent the portable microphone excitation voltage from entering the system.

NOTE: Vendor-furnished FM radios capable of communicating with the Government portables will meet this requirement.

B8.4.6.5 Navigational systems. No requirements.

B8.4.6.6 Audio Control System.

B8.4.6.6.1 One audio control system shall be installed for the pilot and spotter/gunner, which provides control, selection and operation of multiple radio transceivers. Separate audio system controls shall be provided for the pilot to select specific receiver audio outputs and transmitter microphone/PTT inputs of multiple radios. An intercom system shall also be provided for the pilot and spotter/gunner position. Audio level controls shall be provided for the pilot and observer to adjust audio outputs to their respective earphones.

B8.4.6.6.2 Transmitter selection and operation. Whenever a transmitter (or PA system, when installed) is selected, the companion receiver audio shall automatically be selected for the corresponding earphone. Transmitter sidetone audio shall be provided for the user as well as at the other position for cross monitoring.

B8.4.6.6.3 Receiver Audio Selection and Operation. Selector switches shall be provided for the pilot earphone to permit selecting receiver audio from any one or combination of all receivers. The adjustable audio output shall be capable of 100 mW (600 ohms) with less than 10 percent distortion.

B8.4.6.6.4 Location and Marking. The respective controls of each audio control system shall be located conveniently for the pilot. Labeling and marking of controls must be clear, understandable, and permanent.

B8.4.6.7 Earphones and Microphones.

B8.4.6.7.1 (Helicopter) The system shall be designed for operation with 600 ohm earphones and 150 ohm carbonequivalent, noise-canceling boom type microphones (Gentex electret type Model 5060-2, military dynamic type M-87/AIC with CE-100 TR preamplifier, or equivalent) with U-75/U type connector plug. The only exception to this is the pilot's position, which may be a low impedance (dynamic) configuration.

B8.4.6.7.2 All earphone/microphone jacks in the aircraft (except the pilot's) shall be U-92A/U (single/female) type, which will accept U-174/U type plugs.

B8.4.6.8 Push-to-Talk (PTT) Operation. Separate PTT switches shall be provided for radio transmitter operation and intercom operation at the pilot's position. The pilot's switches shall be located on the stick or cyclic control, as applicable. The spotter/gunner's interphone switch shall be located on the cord to the earphone/microphone connector.

B8.4.6.9 Intercom System. An intercom system shall be provided to serve the pilot and spotter/gunner. Intercom audio shall mix with, but not mute, selected receiver audio (Override Type). The intercom shall provide switchable "hot mike" and "push-to-talk" capability for the pilot and the spotter/gunner. An intercom audio level control shall be provided for adjusting the individual earphone audio to a comfortable listening level. Microphone operation on the intercom system shall be via PTT switches.

B8.4.6.9.1 Sidetone audio shall be provided to the earphone connector associated with the microphone in operation.

B8.4.6.9.2 The audio output shall be capable of 100 mW (600 ohms) with less than 10 percent distortion.

B8.4.6.10 Avionics Installation and Maintenance Standards.

B8.4.6.10.1 All avionics systems used in or on the aircraft for this contract and their installation and maintenance shall comply with all manufacturers' specifications and applicable Federal Aviation Regulations contained within 14 CFR regardless of any exclusion for public aircraft allowed in 14 CFR.

B8.4.6.10.2 Strict adherence to the recommendations in FAA AC 43.13-1A Chapter 11, "Electrical Systems", and Chapter 15, "Radio and Electronic Systems," as well as AC 43.13-2A Chapter 1, "Structural Data", Chapter 2, "Radio Installation," and Chapter 3, "Antenna Installation," is required. All avionics systems requiring an antenna shall be installed with a properly matched aircraft-certified, broadband antenna unless otherwise specified.

B8.4.6.10.3 All avionics systems requiring an antenna shall be installed with a properly matched, aircraft-certified antenna unless otherwise specified. Antennas shall be polarized as required by the avionics system, and have a VSWR less than 2.5 to 1.

B8.4.6.10.4 Avionics equipment mounting location and installation shall not interfere with passenger safety, space, and comfort. Avionics equipment will not be mounted under seats designed for deformation during energy attenuation. In all instances, the designated areas for collapse shall be protected.

B8.4.6.10.5 Although the aircraft to be provided may not be certified for IFR flight, the aircraft's static pressure system, altimeter instrument system, and automatic pressure altitude reporting system shall be maintained in accordance with the IFR requirements of 14 CFR 91.411 and inspected and tested every 24 calendar months as specified by 14 CFR Part 43, appendices E and F.

B8.4.7 Maintenance Requirements.

B8.4.7.1 Airworthiness Directives (ADs) & Manufacturer's Mandatory Service Bulletins (MMSBs). All applicable FAA ADs and required MMSBs shall be complied with prior to the performance of this contract. A list of FAA ADs and required MMSBs on the make and model of aircraft offered shall be made available. The list will be similar to that in Advisory Circular AC 43-9B. Signature of persons verifying accuracy of the list is required. All ADs and required MMSBs published during the contract shall be complied with.

B8.4.7.2 Time Between Overhaul (TBO) And Life Limited Parts.

B8.4.7.2.1 All components, including engines, shall be replaced upon reaching the factory recommended TBO or FAA-approved extension. Life limited parts shall be replaced at the specified time in service hours or cycles.

B8.4.7.2.2 Aircraft operated with components or accessories on approved TBO extension programs are acceptable provided, (1) the Vendor is the holder of the approved extension

authorization (not the owner if the aircraft is leased), and (2) the Vendor operates in accordance with the extension authorization.

B8.4.7.2.3 The Vendor shall supply, at the time of the initial agency inspection, a list of all items installed on the aircraft that are required to be overhauled or replaced on a specified time basis. This list shall include the components name, part number, serial number, total time, service life (or inspection/overhaul time interval), and time and date when component was overhauled, replaced, or inspected.

ATTACHMENT 4 FIRST AID & SURVIVAL KITS

These are minimum required items for Special Use Activities in the United States and U.S. Possessions. Additional survival kit items are required for flight activities conducted in Canada and Alaska.

Minimum First Aid Kit Items

Each kit must be in a dust-proof and moisture-proof metal or heavy plastic container. The kit must be readily accessible to the pilot and passengers.

Passenger Seats Passenger Seats

Item 0-9 10-50

Adhesive bandage strips, (3"long) 8 16

Antiseptic or alcohol wipes (pkts) 10 20

Bandage compresses, 4" 2 4

Triangular bandage, 40" (sling) 2 4

Roller bandage, 4"x 5 yds (gauze) 2 4

Adhesive tape, 1"x 5 yds (std roll) 1 2

Bandage scissors 1 1

Body Fluids Barrier kit: 1 1

2 - pair latex gloves

1 - face shield

1 - mouth-to-mouth barrier

1 - protective gown

2 - antiseptic towelettes

1 - biohazard disposable bag

NOTE: Splints are recommended if space permits.

Minimum Aircraft Survival Kit Items

Knife

Signal mirror

Signal flares (six each)

Matches (two small boxes in waterproof containers)

Space blanket (one per occupant)

Sleeping bag

Water (one quart per occupant [not required when operating over areas with adequate drinking water])

Food (two days emergency rations per occupant)

Candles

Water purification tablets

Collapsible water bag

Whistle

Magnesium fire starter

Nylon rope or parachute cord (50 feet)

For travel over rain forest areas, the following additional requirements:

Heavy plastic sheeting or waterproof tarps (2 each – 8' X 10')

Machete (2 each)

Flares carried shall be capable of penetrating above a forest canopy of 60'

Updated 9/00

Appendix K. Bear Placement Protocols

The Zoo Clearing House is the place to begin networking to determine if there is a facility looking for a bear. This responsibility is shared among zoos, so it is a good idea to call a large zoo or the National Zoological Society in Washington DC and inquire about the current location of the clearing house. In 1993 it was based at the Woodland Park Zoo in Seattle. Lee Warde, 1993 Zoo Clearing House Coordinator (206) 684-4832, facilitated communications with Robert Evans at the San Antonio Zoo (210) 734-7183 and Nora Fletchell at Michigan's John Ball Zoo (616) 776-2591. Nora Fletchell has requested information on any future problem bears. They are developing a North American bear exhibit to replace their aging Asiatic Black Bears.

Other good contacts include Phil Koehl who handles zoo and institution placements for the Alaska Department of Fish and Game (ADFG) 465-6198 and Harry Reynolds, Wildlife Biologist for ADFG 459-7238. Bruce Dale at ADFG's Fairbanks office 459-7235 could also be helpful.

Dr. Charlie Robbins at Washington State University sometimes needs bears for metabolic research. He is particularly interested in cubs or small yearlings. He can be reached at (509) 335-1119.

If a bear is going to be destroyed, research needs for tissue samples should be queried. Joe Cook at the University of Alaska, Fairbanks museum (474-6947) was extremely interested in muscle, liver, kidney, and heart samples for genetics work. He was also hoping to acquire the pelt and skeleton. Randy Zarnke, ADFG pathologist (456-5156), is researching Trichinosis and was interested in 75% of the tongue and 4 or 5 ml of serum. Chris Servheen, The Grizzly Bear Recovery Coordinator, in Missoula Montana, is interested in dried gall bladders.

Before destroying a bear, technicians should consult with ADF&G about the paperwork for a Defense of Life and Property case. Instructions and diagrams for ADF&G recommended bear skinning techniques are as follows:

Appendix L. Eielson Visitor Center Bear Protocol

The following guidelines will maintain a safety margin while providing visitors a bear viewing opportunity.

1. Visitor safety takes priority over all other activities. When a bear approaches the EVC, alert staff members that a bear is in the area. Available staff members including other naturalists on duty, ANHA employees, B&U or R&T workers, and Visitor Transportation System (VTS) dispatchers, should be used to monitor and control the situation. If a B&U employee is on site, they should be stationed in the Observation Tower. Available hand-held radios should be issued to staff members monitoring the bear's location and handling crowd control. Use a local channel for communication.
 - A. Warn all visitors to collect food and be ready to move onto buses or inside the center, if necessary.
 - B. The VTS dispatcher should alert arriving and departing bus drivers that loading and unloading procedure may be modified. If necessary, visitors may be asked to stay on their buses or in the visitor center until further notice. When it is determined that the bear's location will not endanger bus passengers, they may be loaded and unloaded at the EVC front door. Drivers should instruct their passengers to WALK to and from the buses.
 - C. Remove any unattended packs on the porch or at the picnic tables; move them inside the building.
2. If the bear approaches the parking lot, move all visitors inside or behind the locked gate on the observation deck. Use a polite but firm voice to move people slowly away from the bear. Watch for stragglers trying to get closer to the bear. Only use the megaphone and loud speaker when hikers are approaching the bear's location unaware of the situation.

When the bear moves to a safe distance, reopen the doors and gate. Prevent any visitors from following the bear.

3. Complete a BIMS form and submit it to the Wildlife Management Technicians.

Appendix M. Bear Handling Management Actions

Bear Management Actions
 Denali National Park and Preserve
 Updated 2002

| Date | Location | # of Bears | Age/Sex | Management Action | Justification |
|-----------|-------------------------------|------------|-------------------|-------------------|---|
| 7/1946 | Camp Eielson | 1 GB | No Data | Destroyed | No Data |
| 9/1948 | AK Railroad Mile 349 | 1 GB | No Data | Destroyed | The AKRR crew attempted to drive the bear off with dynamite. The dynamite's explosion injured the bear severely enough that it had to be destroyed. |
| 8/8/1949 | Toklat River to Mile 25 | 1 GB | No Data | Relocated | No Data |
| 8/16/1949 | Mile 83 | 1 GB | No Data | Destroyed | No Data |
| 8/17/1949 | Old Morino Cabin | 1 BB | No Data | Destroyed | Shot by USGS Employees when the bear pushed on the side of the tent they were camped in. |
| 9/1949 | ToklatRi. To Teklanika Ri. | 1 GB | No Data | Relocated | Problem bear at the Toklat Road Camp. (See human injury, 1949) |
| 8/1951 | Morino CG to East Fork | 1 GB | Adult/? | Relocated | Bear disturbed Caches at the railroad depot. |
| 9/12/1951 | Savage CG | 1 GB | Adult/M 650lbs | Destroyed | The bear broke into Savage river bridge construction crew's cookhouse. |
| 7/31/1952 | HQ Res. to Teklanika R. | 1 BB | No Data | Relocated | The bear ate bacon from a cooler. |

| | | | | | |
|-----------|---------------------------|------|---------------|--------------------|--|
| 8/1952 | East Fork camp to Unknown | 2 GB | Adult/F & cub | Relocated | The bear “caused trouble”. The sow and one cub were moved. The fate of the second cub is unknown. |
| 8/1952 | East Fork Camp | 2 GB | Adult/F & cub | Trapped & Released | The bear “caused trouble”. The sow and one cub (3 cubs in total) were trapped and released at the same location to avoid disrupting the family. No further problems were reported. |
| 6/4/1959 | Savage CG | 1 GB | ?/2-3 yrs. | Destroyed | The bear was lame and remained near campgrounds. The Boy Scouts had been feeding the bear. Porcupine quills were found in one foot(Murie 1961). |
| 6/1960 | Eielson VC to Mile 80 | 1 GB | No Data | Relocated | The bear was attracted to the garbage in the Eielson Contractor’s camp. |
| 9/9/1960 | Mile 5.6 to East Fork | 1 GB | No Data | Relocated | The bear had remained in the hotel area for 2 days. |
| 1960 | Toklat CG to Mile 65 | 1 GB | No Data | Relocated | The bear had made visits to the Toklat contractor’s camp. |
| 8/1960 | Mile 5 to Mile 40 | 1GB | ?/2yrs | Relocated | The bears were attracted to the garbage pit. |
| 7/1/1961 | Hotel to Thorofare Pass | 1 GB | No Data | Relocated | No Data |
| 8/27/1961 | Morino CG to Mile 60 | 1 GB | ?/3-4 yrs. | Relocated | The bear disturbed employees and visitors. |
| 9/4/1961 | Hotel-High way Pass | 1 GB | No Data | Relocated | No Data |
| 9/24/1961 | Hotel to Sable Pass | 1 GB | No Data | Relocated | No Data |
| 8/28/1963 | 5 Mile Dump | 1 GB | Spring cub | Destroyed | The mother was found dead of unknown causes. One of 3 cubs |

| | | | | | |
|-----------|-------------------|------|-----------------|-------------------------|---|
| | | | | | remained in the area and was destroyed. |
| 10/1963 | HQ area | 1 BB | No Data | Relocated- Destroyed | Residential area garbage cans were persistently disturbed and a vehicle was damaged. The bear was relocated once and then destroyed. |
| 9/1965 | HQ to Unknown | 1 GB | Subadult | Relocated | Siding torn off a residence. |
| 6/16/1968 | Stony Hill | 1 GB | No Data | Poached | Illegal kill within the park. Prosecuted. |
| 8/24/1969 | Mile 70 | 1 GB | 3 yrs./M | Destroyed | No Data |
| 6/25/1970 | Eielson VC | 1 GB | 2 yrs./M | Destroyed | The bear was consistently too close to visitors and accepting handouts. |
| 7/4/1970 | Wonder Lake RS | 1 GB | 2 yrs./F | Destroyed | The bear was crippled (cause unknown)and lingering around the campground. |
| 7/26/1971 | Toklat CG | 1 GB | 3 yrs./M | Destroyed | After causing property damage 4 times the bear was relocated. The bear returned and was destroyed. A .30 caliber bullet was found in its leg. |
| 9/2/1971 | HQ Dump | 1 GB | No Data | Destroyed | The bear was consistently feeding at the dump. |
| 8/1/1972 | Riley Cr. CG | 1 GB | Subadult/ ? | Destroyed | Property damage and close contact with visitors for 2 days. |
| 8/20/1973 | Wonder Lake CG | 1 GB | 20- 25yrs./M | Destroyed | The Bear was persistent in developed areas and caused property damage. See human injury, 1973. |
| 9/10/1973 | HQ Dump | 1 GB | Adult/? | Poached | A freshly skinned carcass was found near tire tracks. |

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|-----------|------------------------------|------|-----------------|-----------------------|---|
| 6/21/1974 | Eielson VC to Lacuna Glacier | 1 GB | Adult/F | Relocated – Destroyed | The Bear was frequenting roadside areas from Stony Cr. To Eielson VC. She returned 2 weeks later. She was destroyed 2 years later. |
| 6/24/1975 | Riley Cr. CG to Mile 72 | 1 GB | Spring cub | Relocated | No Sow was observed while this “thin and unenergetic” cub, frequented the campground. |
| 6/14/1976 | Stony Hill | 1 GB | Adult/F | Destroyed | Frequented Eielson to Stony area since 1972. The sow neither damaged property nor sought handouts or garbage. Lack of fear and proximity to people were the problem. See 6/21/1974. |
| 8/30/1976 | HQ Dump | 1 GB | Adult/F | Accidental Death | The Sow (3 cubs) died instantly after running into a fence. A patrol ranger had frightened the bear with a siren. |
| 9/1/1976 | HQ Dump to Alaskaland Zoo | 2 GB | Yearlings / M&F | Donated | Without maternal guidance the cubs were expected to die or habituate to developed areas. |
| 9/3/1976 | HW Dump to Mile 56 | 1 GB | Yearling/ F | Relocated | After the Sow’s death an unsuccessful attempt was made to unite this cub with another sow and yearling cub. |

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|-----------|---|------|---------------|-----------|--|
| 6/7/1977 | Riley Cr. CG to Post Lake, 40 Miles S of Farewell Lake. | 2 GB | 2.5 yrs./2M | Relocated | The two 2.5 year old cubs and sow had been frequenting C-Camp, HQ, and Riley Cr. CG areas, disturbing garbage cans and approaching buildings. They killed a moose calf near the C-Camp road. |
| 8/14/1977 | Little stony Cr. To Lake east of Foraker River, SE of VM Straight | 1 GB | Subadult/F | Relocated | The bear was continually charging hikers and once touched a female hiker. The bear was reported on 9/20/1976 in the Toklat area. No further problems from this bear were reported. |
| 8/4/1978 | Eielson VC to Tattler Cr. | 1 GB | 1.5-2.5yrs./M | Relocated | This small bear was frequenting the EVC area. Although it was not aggressive it commonly approached people. It remained in the Igloo Canyon area for the rest of the summer. |
| 8/6/1978 | Eielson bluffs to Park boundary on Swift Fork | 1 GB | Adult/M | Relocated | The bear caused frequent property damage in the backcountry and VC. The bear was shot by a hunter, in 1979, W of the Swift Fork. |
| 6/14/1979 | Toklat Rd. Camp to Big Lake 37 km SSW of Lk Minchumina | 1 GB | Adult/F | Relocated | Small bear followed employees, and approached buildings after being chased off. Possible damage to hikers gear up Toklat River. |
| 7/3/1979 | Bergh Lk.- Sprucefish Lk. | 1 GB | Subadult/M | Relocated | Damaged gear and got food from hikers on Stony Cr. |

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|-----------|---------------------------------|------|------------|----------------------|--|
| 7/5/1979 | Toklat RS-Carey Lk. | 1 GB | Adult/F | Relocated | Property damage and lack of fear. |
| 8/4/1979 | Sanctuary CG-Mile 76 Gravel Pit | 1 GB | Subadult/F | Relocated | Came through campground multiple times. Property damage and Lack of fear. |
| 7/26/1980 | Morino CG | 1 GB | ?/F | Relocated, Destroyed | The bear was tearing up packs and getting food. Relocated 52 km by helicopter but returned, and continued raids. Destroyed. |
| 9/12/1982 | Stampede strip | 1 BB | No Data | Destroyed | Persistently approached cabin. Killed in defense of property. |
| 6/5/1984 | Tattler Cr. | 1 GB | Adult/F | Radio Collared | Bear # 102 obtained food from back packers. |
| 7/9/1984 | Sable Pass | 1 GB | Adult/F | Radio Collared | Bear #109 obtained food from Backpackers. |
| 7/16/1984 | McKinley Bar | 1 BB | Adult/M | Radio Collared | Bear #103 was captured on McKinley Bar at a campsite after obtaining human food. |
| 7/26/1984 | Red Top Mine | 1 BB | Adult/M | Destroyed | Bear #103 had been around camp several times and was trying to get on the roof of a cabin. Bill Tull shot the bear because he felt the camp residents were threatened. DLP. |
| 8/1984 | Stampede Mine | 1 BB | Adult/M | Destroyed | The bear was making determined efforts to break into a cabin. Gordon Harrison was inside the cabin with his family. The bear did not respond to efforts to chase it away. DLP. |

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|-----------|-------------------------|------|----------------------------|-----------|---|
| 7/17/1986 | Stampede Camp | 1 BB | Adult/M | Destroyed | The bear had been very close to a tent. Wyane Howell shot the bear when it approached to within 5'. |
| 8/26/1986 | Ponds near MP 80 | 1 GB | Adult/F | Destroyed | Management bear #107 drowned after being tranquilized to replace her radio collar. Accidental. |
| 10/1/1987 | Dan Ashbrook's Property | 2 GB | Subadult/ F, No Data | Destroyed | Bears had obtained food at the Kantishna Roadhouse and broken into the Ashbrook's cache of winter food. Two bears were shot 15 feet from his doorway; one killed the other unknown. |
| 6/20/88 | Camp Denali | 1 BB | 3yrs./M | Relocated | Management bear #133 was relocated to Castle Rocks after obtaining garbage at the Kantishna Roadhouse. The bear returned 4 days later but left the area on his own. |

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|-----------|------------------------------|------|----------|--------------------|--|
| 9/14/1988 | Kantishna | 1 GB | 4yrs./M | Relocated, Died | Bear #115 was collared in 1987 after obtaining human food near Toklat RC. In fall of 1988 he obtained human food at the Kantishna roadhouse. He died in a relocation attempt. See <u>Grizzly Cub</u> by R. MacIntyre. |
| 9/1990 | Kantishna | 1 GB | No Data | Destroyed | Grizzly had been frequenting the Kantishna Roadhouse obtained garbage, and was aggressive towards people. The bear disappeared, likely killed by Dan Ashbrook as reported by another Kantishna resident. CI-900324. High probability of an illegal kill. |
| 6/23/1991 | Denali Mountain Lodge | 1 BB | 6yrs/M | Destroyed | Management bear #133 was shot while obtaining food from an employees wall tent. DLP. |
| 4/1992 | Tokosha Mtns. South District | 1 GB | 23yrs./F | Poached | Skinned carcass with gall bladder removed found inside Park boundary by South Dist. Rangers. Case was successfully prosecuted. |
| 6/15/1992 | Red Top Rd. | 1 GB | Adult/F | Destroyed | Michael and Robert Mark Anthony shot and killed a bear believed to have damaged their cabin. Necropsy results suggested the wrong bear was killed. DLP. |

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|------------|---|------|-----------|--------------------------------|--|
| 8/28/1992 | Hornet Cr. Squatters Camp, 1 mi. N of Park boundary | 1 BB | No Data | Destroyed? | Bear had been raiding campsites for a week before it was shot with a handgun. The bear was hit and fled into the woods. |
| 11/11/1992 | Slippery Cr. | 1 GB | 18yrs./M | Destroyed | Mickie Collins killed a research bear that was threatening her. DLP |
| 6/23/1993 | Cantwell | 1 GB | 4yrs./M | Destroyed | Management bear #137 (collared May 1997) was shot in a residential area. State Troopers stated it was not a NLP. Charges filed. |
| 9/1993 | Kantishna | 1 GB | 4-5yrs./M | Relocated | Management bear #744 first obtained human food in June. He returned to Kantishna after 2 relocation attempts and continued to be attracted to developed areas. The bear was relocated to the Grizzly Discovery Center in W. Yellowstone Montana. |
| 1996 | Highway Pass | 1 GB | 4-5yrs./F | Radio Collared, Collar Removed | Bear obtained backpacker's food. It was radio collared and monitored. Radio collar was removed on 9/??/97. |
| 1996 | West Fork Yentna Ri. | 1 BB | ?/M | Destroyed | Shot and killed by Denali Rangers while bear was destroying patrol camp. DLP. |

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|-----------|-------------------------|------|--------------------------------|-----------------------------------|--|
| 1996 | Wonder Lake | 1 BB | 2-3yrs. /M | Radio Collared, Collar Removed | Bear obtained improperly stored backpacker food. It was radio collared and monitored. Radio fell off and was recovered on 9/??/97. |
| 1998 | McKinley Gold Camp | 1 BB | ?/M | Radio Collared | The bear was trapped following reports of a bear obtaining food and damaging property at the Gold Camp. The bear was radio collared and aversively conditioned. |
| 8/4/1998 | Teklanika River. | 4 GB | 1 Adult/F, 3 Subadult/ M | Radio Collared | Bears obtained food on two occasions by entering backcountry camps. Closely approached people at road and in backcountry. |
| 9/1/1999 | East side of Broad Pass | 1 GB | ? | Subsistence Harvest | A subsistence hunter legally took a Grizzly Bear. |
| 9/11/2000 | Camp Denali | 1 BB | Adult M | Radio Collared Relocated | Management bear #2001 had obtained garbage at Camp Denali and was rewarded with food out of refrigerator at North Face Lodge. The bear was captured, radio collared and relocated by helicopter 25 miles west of Kantishna. The bear was aversively conditioned at release site. |

| | | | | | |
|-----------|---------------------|------|---------|---------------------|---|
| 5/31/2001 | Teklanika River | 1 GB | adult/F | collar Removed | Management bear#9805 was captured on the Teklanika river, east of Cathedral mtn. Her Collar was removed as Monitoring of her Activity is not currently a critical management Issue. |
| 9/10/2002 | Kantishna Roadhouse | 1 BB | 8yr/M | Destroyed DLP | Management bear #9801 Had been causing Problems in Kantishna Starting in June of this Year. On 9/7 it broke Into a freezer at the Roadhouse and obtained Human food. On 9/9 it Broke into the Roadhouse Garbage shed and on 9/10 It entered the kitchen. It was shot and killed by a Roadhouse employee |
| 9/2002 | Kantishna hills | 1 GB | ? | Subsistence Harvest | A subsistence hunter legally took a Grizzly Bear near Glen Creek in The Kantishna hills. |

Appendix N. Chronology of Bear Inflicted Human Injuries in Denali National Park and Preserve

Updated 2002

Date: 7/12/1949

Number of Persons Injured: 1

Number of Bears Involved: 3 Grizzly Bears

Location: Ewe Cr.

Name of Injured: Jack Reed

Age of Injured: 19-25

Sex of Injured: Male

Nature of Injury: Puncture wounds on lower back.

Narrative: Reed, a USGS crew member, surprised 3 bears, described as 2 adults and a cub," on a tundra slope. One bear chased him downhill until Reed leaped off a 20-foot cliff, just as the bear swatted him in the back. The bear came to the foot of the cliff and chased Reed farther, but eventually gave up and ran away. Also see Murie, A. 1961. A Naturalist in Alaska, p. 75.

Date: 7/1949

Number of Persons Injured: 1

Number of Bears Involved: 1 Grizzly Bear

Location: Mile 30

Name of Injured: No Data

Age of Injured: 40-60

Sex of Injured: Male

Nature of Injury: Punctures, lacerations on one arm.

Narrative: Two Alaska Road Commission employees were relocating a live-trapped grizzly bear from Toklat to Teklanika. Upon raising the trap door to release the bear, it refused to leave. One of the employees got out of the cab and walked around the front of the truck. Just then the bear exited the trap, ran around the front of the trap, caught the employee and bit and mauled one of his arms. The injuries resulted in the loss of use in that arm.

Date: 8/4/1961

Number of Persons Injured: 1

Number of Bears Involved: 1? Grizzly Bear

Location: E. side of Igloo Mountain

Name of Injured: Napier Shelton

Age of Injured: No Data

Sex of Injured: Male

Nature of Injury: Punctures, lacerations on left foot and thigh.

Narrative: Shelton was increment boring a treeline spruce when he heard a loud "woof" and discovered a grizzly bear coming towards him. Shelton rapidly climbed the tree, which was leaning sharply downhill, but the bear climbed up after him and bit his left foot. The bear climbed the tree a second time and bit Shelton's right thigh. The bear then retreated slowly. The increment borer that Shelton was using may have been making squeaking sounds that attracted the bear. Dr. A. Murie had observed a sow with 2 cubs in the same area earlier in the day.

Date: 8/8/1967

Number of Persons Injured: 1

Number of Bears Involved: 3 Grizzly Bears

Location: 1 mile East of Road at MP 56

Name of Injured: James Magowan

Age of Injured: No Data

Sex of Injured: Male

Nature of Injury: Punctures, lacerations of head, neck, arm, shoulder, thorax, legs, back, buttocks.

Narrative: Magowan, the seasonal Toklat ranger, received a report of a bear chasing a vehicle just west of the Toklat campground. He drove to the area with his wife, daughter, and 2 visitors, in Magowan's personal vehicle. He took no firearm. He observed 3 bears about 1 mile from the road at mile 56 and began hiking towards them with a borrowed camera and 200mm lens, in the company of his wife and daughter. When 200-400 yards from the sow with cubs, the sow sensed his presence and began circling him. From 200 yards she charged and mauled him severely.

Date: 7/21/1972

Number of Persons Injured: 1

Number of Bears Involved: 3 Grizzly Bears

Location: East Side of Divide Mountain, 1.5 miles South of Park road.

Name of Injured: Chris Cauble

Age of Injured: 22

Sex of Injured: Male

Nature of Injury: Punctures, lacerations on right leg, arms, back, and head.

Narrative: Cauble was hiking along the gravel bar of the Toklat River and observed a single bear on a hillside 0.75 mi. in front of him. He continued towards the bear and walked up the hillside, aiming for a route above the point where the bear had been, attempting to detour around it. At a point where he thought he was safe from the bear, but might be able to see it, he stopped and took off his pack. He soon saw the bear, and then 2

bears about 100 yards away. A third bear, the sow, appeared and charged from about 120 yards away. She knocked Cauble into some willows and mauled him briefly.

Date: 7/23/1973

Number of Persons Injured: 2

Number of Bears Involved: 3 Grizzly Bears

Location: Headwaters of Big Creek

Name of Injured: Mark Carey, Roger Pearson

Age of Injured: 24, 26

Sex of Injured: Both Male

Nature of Injury: Mark Carey suffered lacerations on left thorax, Roger Pearson suffered abrasions on his right shoulder, contusion, left eye.

Narrative: Carey and Pearson were camped without a tent. At 11:45 pm a sow with 2 cubs appeared and made 2 bluff charges, then approached to the edge of their ground cloth. The bear jumped over Pearson and attacked Carey, who was standing up in his sleeping bag, trying to get out. Carey fell to the ground and played dead. Pearson was then attacked, but he too played dead and the bear soon left.

Date: 8/19/1973

Number of Persons Injured: 1

Number of Bears Involved: 1 Grizzly Bear

Location: Wonder Lake

Name of Injured: John Osborn

Age of Injured: 21

Sex of Injured: Male

Nature of Injury: Lacerations on arms and hand.

Narrative: Osborn was ironing clothes in the Wonder Lake Ranger Station when he heard a noise on the front porch he believed was made by Bill Reed. Osborn opened the door and found a grizzly bear tampering with the refrigerator on the porch. Osborn shut the door and the bear immediately began to knock the door in. Osborn jumped through the rear window, lacerating his hand and arm.

Date: 9/11/1973

Number of Persons Injured: 1

Number of Bears Involved: 4 Grizzly Bears

Location: 0.5 miles North of road at MP 7

Name of Injured: Alfred Johnson

Age of Injured: No Data

Sex of Injured: Male

Nature of Injury: Punctures, lacerations, head, neck, arms.

Narrative: Johnson was taking pictures for the Alaska Department of Fish and Game. He climbed a spruce tree 100-200 yards from the bears and made sounds like a wounded rabbit. The sow ignored him for a while, but suddenly ran to the base of the tree, climbed part way up and pulled Johnson to the ground by his left foot. She mauled him severely before leaving.

Date: 8/6/1975

Number of Persons Injured: 1

Number of Bears Involved: 2 Grizzly Bear

Location: East face Igloo Mountain

Name of Injured: Michael Bishop

Age of Injured: 26

Sex of Injured: Male

Nature of Injury: Punctures, right thigh.

Narrative: While hiking on Igloo Mountain, Bishop, photographing sheep, crested a rise and saw 2 bears 40 yards away. One of the bears charged. Bishop ran down the rise and fell. The bear leaped and bit him, released and then bit him again in the same spot.

Date: 7/26/1977

Number of Persons Injured: 1

Number of Bears Involved: 4 Grizzly Bears

Location: Drainage SE of Highway pass

Name of Injured: Robert Muller

Age of Injured: 26

Sex of Injured: Male

Nature of Injury: Broken ulna, lacerations, forearm, upper back and head.

Narrative: Muller and companion walked within 50 yards of the bears to photograph. One of the yearling cubs bluff charged. The sow then charged, Muller ran until the sow was close. He then dropped to the ground and curled up. The sow mauled him for 5 seconds.

Date: 6/3/1980

Number of Persons Injured: 1

Number of Bears Involved: 3 Grizzly Bears

Location: Riley Cr. East of RR bridge

Name of Injured: Mark Davenport

Age of Injured: 22

Sex of Injured: Male

Nature of Injury: Laceration to hand.

Narrative: Walking at 24:00 hrs., Davenport, encountered 3 bears on an unmaintained path leading into a wooded creek bank. One bear approached and Davenport shouted. The bear hesitated then charged from 40 feet. Davenport stepped behind a tree and the bear bit his left hand through a ski glove.

Date: 6/4/1980

Number of Persons Injured: 1

Number of Bears Involved: 2 Grizzly Bear

Location: Park road mile 1

Name of Injured: Dan Merren

Age of Injured: 21

Sex of Injured: Male

Nature of Injury: Puncture, left ankle.

Narrative: Three hotel workers walking on the road at 00:55 hrs saw 2 moose cross the road 100 m ahead with 2 bears in pursuit. The larger of the bears saw the hikers and loped towards them. The hikers ran. Merren climbed a tree but the bear pulled him down. The bear moved off and Merren got up the tree again but higher. The bear returned and tried to reach Merren unsuccessfully.

Date: 8/11/1980

Number of Persons Injured: 1

Number of Bears Involved: 2 Grizzly Bear

Location: Grant Cr., Mt. Eielson

Name of Injured: Hiroshi Tokura

Age of Injured: 25

Sex of Injured: Male

Nature of Injury: See narrative.

Narrative: Four backpackers approached thick brush along creek. The victim stated that he was ahead of others, heard, then saw the bears 6 meters away coming towards him. He yelled, backed away, and sat down covering his head. Another member of the party stated that he ran from the bear. The bear attacked causing almost complete avulsion of the scalp, severe facial and shoulder lacerations, puncture wounds to the back and buttock and severe facial fracture.

Date: 8/31/1982

Number of Persons Injured: 1

Number of Bears Involved: 1 Grizzly Bear

Location: 1 mile east of Teklanika Campground

Name of Injured: John Alsworth

Age of Injured: 28
Sex of Injured: Male
Nature of Injury: Puncture wounds, buttocks.

Narrative: Two day hikers met a bear at 10 meters in brush. They left food that the bear ate. The bear approached again and ate some cookies thrown in the opposite direction. The bear approached again, the hikers lay down and the bear circled, sniffed and bit Ashworth's buttocks once. The bear left. The bear appeared more curious than aggressive.

Date: 6/12/1985
Number of Persons Injured: 1
Number of Bears Involved: 1 Grizzly Bear
Location: Railroad tracks 200 meters South of depot
Name of Injured: Saskia Roggezeen
Age of Injured: 25
Sex of Injured: Female
Nature of Injury: Punctures, buttocks and right foot.

Narrative: At 2045 hrs, Roggezeen and companion were walking south along the RR tracks from the train depot. They observed a bear about 50 meters away, near Morino Campground. They ran down the track embankment into the brush. The bear pursued them. Roggezeen fell and was bitten briefly by the bear.

Date: 6/13/1985
Number of Persons Injured: 1
Number of Bears Involved: 4 Grizzly Bears
Location: Savage Campground near site 3
Name of Injured: LeAnn Landstrom
Age of Injured: 30
Sex of Injured: Female
Nature of Injury: Punctures, back, right thigh, buttocks.

Narrative: Landstrom was walking through the forest towards the park road at 2145 hrs when she saw a sow with 3 yearlings 100-150 feet ahead. The sow charged and Landstrom ran. The bear caught her, bit her, and then backed off. Landstrom got up and was attacked a second time. The bear moved off again and Landstrom climbed into a tree. The sow was probably acting defensively to protect her cubs.

Date: 5/31/1987
Number of Persons Injured: 1
Number of Bears Involved: 2 Grizzly Bears
Location: 5 miles South of Park road, West branch of Toklat River.

Name of Injured: Randy Smith
Age of Injured: 29
Sex of Injured: Male
Nature of Injury: Broken left foot.

Narrative: Smith was passing the base of a 20 foot high cut bank when he looked up and saw 2 bears at the top of the bank 100 meters away coming towards him. Smith started yelling, one bear veered off, but the other continued to charge. It knocked him down and stepped on his foot as he turned away from it. The blow also ripped Smith's pack. Smith curled up on the ground and the bear moved off immediately. Smith felt he had surprised the bears. He thought they had been in the same area a few days earlier.

Date: 7/5/1985
Number of Persons Injured: 1
Number of Bears Involved: 1 Grizzly Bear
Location: 0.5 miles North of Park road at mile 59.
Name of Injured: Lee Grimstad
Age of Injured: 29
Sex of Injured: Male
Nature of Injury: Laceration, punctures right calf.

Narrative: While day hiking, Grimstad saw a bear in the distance and approached to within a quarter mile for photographs. The bear slowly moved towards Grimstad as it fed. Its movements were not direct or purposeful. Grimstad continued to photograph the bear during its approach and made no attempt to scare it off as it moved to within a few feet of him. At this point Grimstad lay down and the bear cautiously sniffed him and bit his leg. Grimstad moved abruptly and the bear backed off and moved away. Grimstad described the bear as curious rather than aggressive.

Date: 6/6/1988
Number of Persons Injured: 1
Number of Bears Involved: 1 Grizzly Bear
Location: 3.5 miles South of Savage River Campground.
Name of Injured: Graig James
Age of Injured: No Data
Sex of Injured: Male
Nature of Injury: Laceration, scalp.

Narrative: Craig was sleeping on the ground without a tent, on a defined bear trail, near a winter-killed moose. The backcountry unit was closed at the time. Craig felt a blow to his head at 01:30 that elicited a loud yell. Craig circled up into a ball and heard the animal move off. He never saw the bear.

Date: 7/9/1997

Number of Persons Injured: 1

Number of Bears Involved: 3 Grizzly Bears

Location: Backcountry Unit #11, low saddle between Stony Dome and Gravel Mt..

Name of Injured: Lucynthia Robins

Age of Injured: 20

Sex of Injured: Female

Nature of Injury: Single injury to hand; puncture on top of hand.

Narrative: Lucynthia was hiking out from behind Stony Dome, alone, making noise by singing. She was 20-30 yards below a ridge and saw a bear with 2 cubs on top of the ridge. The female bear charged towards her, stopped, then continued charging. She stood her ground until the bear was close then she dropped to the ground and played dead. The bear ran on top of her and grabbed her hand in its mouth. She resisted at first then relaxed and the bear let go. The bear pawed her briefly then ran away with its cubs.

Appendix O. Publication on Denali National Park and Preserve Bear Program

BEAR-HUMAN CONFLICT MANAGEMENT IN DENALI NATIONAL PARK AND PRESERVE, 1982-94

DAVID W. SCHIROKAUER,¹ National Park Service, P.O. Box 9, Denali National Park, AK 99755, USA
HILARY M. BOYD,² National Park Service, P.O. Box 9, Denali National Park, AK 99755, USA

Abstract: In response to a dramatic increase in visitation and in problems with grizzly and black bears (*Ursus arctos*, *U. americanus*) during the 1970s, Denali National Park and Preserve implemented a comprehensive bear-human conflict management plan in 1982. The components of Denali's bear-human conflict management plan include visitor education, food-storage regulations, backcountry closures, and experimental aversive conditioning. Prior to the opening of a paved highway to the National Park in 1972, reports of bear-inflicted injuries, property damage, and bears obtaining anthropogenic food averaged <1/year. In 1982, 40 such incidents occurred. After implementation of the bear-human conflict management plan, incidents decreased steadily until 1988 when 9 occurred, a decrease of 77%. Incidents in which bears obtained anthropogenic food decreased from 23 in 1982 to 1 in 1989, a decrease of 96%. A recent slight increase in incidents (all types) may reflect the activities of either a few bears before they were removed or aversively conditioned, or bears which were never subjected to management actions. Since 1984, aversive conditioning was conducted on 2 black bears and 9 grizzly bears. In 8 of these cases, the bears avoided test camps and did not cause further problems during the season aversive conditioning occurred. Four of the bears aversively conditioned in the backcountry stayed away from camps for at least 2 years. Bears successfully broke into bear-resistant food containers in 12 of 55 attempts since 1979, due to improperly latched or defective lids and overfilled containers. There have been no reports of bears breaking into the newest model of bear-resistant food container. This work updates previous analyses of bear-human conflict in Denali National Park and Preserve.

Ursus 10:395-403

Key words: Alaska, aversive conditioning, bear-human interaction, bear-resistant food container, black bear, Denali National Park and Preserve, grizzly bear, *Ursus americanus*, *Ursus arctos*.

Bear management has likely been a part of Denali National Park and Preserve's (formerly Mount McKinley National Park) operations since its creation in 1917, although the first records of such actions are from 1946. Less than 6,000 people annually visited the park when it was accessible only by railroad prior to 1957. The 1958 completion of the Denali Highway increased visitation, but it was the 1972 opening of a paved highway linking the park to Alaska's population centers that increased visitation 5-fold and doubled overnight backcountry use in a year. Concerns about traffic safety and effects on wildlife prompted the National Park Service to restrict private vehicle use on the 154-km road accessing the park's interior and to establish a shuttle bus system. A permit and quota system limiting overnight backcountry use were also implemented.

As visitation and backcountry use increased, so did reports of bear-human conflicts. The Bear-Human Conflict Management Action Program was implemented in 1982 in response to an increase in injuries, property damage, bears charging hikers, and bears obtaining anthropogenic food from <1/year prior to 1972 to 40/year in 1982 (numbers revised in 1994). Between 1917 and 1982

at least 48 bears were destroyed or relocated (0.75 bears/year; Dalle-Molle and Van Horn 1989). Between 1982, when the program was implemented, and 1994 only 2 bears have been removed by management (0.17 bears/year), and the rate of bears damaging property or obtaining anthropogenic food dropped dramatically. Dalle-Molle and Van Horn (1989) described the elements of the program, its implementation, and evaluated its success through 1987. We describe the current elements of the program and evaluate its effectiveness through 1994.

We thank the employees of Denali National Park and Preserve for their contributions to bear management. We also thank J. Dalle-Molle, who designed and implemented this model bear management program, for his dedication. We thank J. Van Horn, G. Olson, K. Stahlnecker, S. Carwile, and J. Keay for their helpful ideas and reviews of early drafts of this manuscript and D. Gianturco for developing the Bear Information Management System database used at Denali. We also thank B. McLellan, M. Gibeau, S. Sharpe, and M. Munson-McGee for their thoughtful reviews of this paper.

STUDY AREA

Denali covers approximately 24,000 km² in interior Alaska. Elevations range from approximately 100 m above sea level to over 6,000 m at the summit of Mount McKinley. Elevation of approximately one third of the park is >1,500 m, where ice and rock predominate. Below the perennial snow line, alpine tundra, dwarf birch (*Betula nana*), and willows (*Salix* spp.) dominate the landscape. Braided rivers drain broad glacial valleys from the alpine regions down to the forested lowlands. For a more detailed description of the vegetation see Murie (1981), Stelmock (1981), Dean and Heebner (1982), and Heebner (1982).

On the north side of the Alaska Range, grizzly bears are abundant in the mountainous areas of alpine tundra and open glacial river valleys. Dean (1987) reported grizzly bear densities as high as 3.2 bears/100 km². Black bears generally inhabit the lowland forests but are also found in alpine regions on the south side of the Alaska Range. Both species eat salmon (*Oncorhynchus* spp.) on the south side of the Alaska Range.

Near the eastern boundary, both inside and outside the park, are tourist services including hotels and restaurants. At the west end of the park road are 4 small lodges on private inholdings, an historic mining district, and several patented and unpatented mining claims. Of the 7 campgrounds located along the park road, 3 accommodate private vehicles. Most visitors get into the park via shuttle and tour buses. A 1988 survey indicated that 95% of bus passengers saw at least 1 grizzly bear during their trip in the park (Machlis and Dolsen 1989).

Day hiking and backpacking from the park road are popular, and hikers generally follow river drainages and ridgelines. The backcountry in the core portion of the park is divided into 43 units which contain no maintained trails or campsites.

Elements of the Bear-Human Conflict Management Program

Special Staff.—A seasonal Wildlife Management Technician was hired in 1982, and 2 have been hired each summer since then to monitor bear-human interactions, investigate bear problems, and conduct bear management activities according to the Bear-Human Conflict Management Action Plan. They also trained park and local employees in bear safety, worked with local businesses and inholders to help them safely coexist with bears, and patrolled front and backcountry areas to monitor compliance with food and garbage handling regulations.

Visitor Education.—All visitors stopped at the Denali Visitor Center to obtain shuttle bus coupons, campground and backcountry permits, *Bicycle Rules of the Road* brochures, and the park newspaper, which included information on food storage and behavior in bear country. A detailed bear encounter brochure was distributed to visitors inquiring about day hikes. Backcountry users viewed an interactive video program on safe backpacking, including a module on camping and hiking in bear habitat. Information specific to Denali was presented, followed by various scenarios and choices about how to act during bear encounters. After choosing an action, viewers were presented with the consequences of their decision. For non-English speaking visitors, there were slide programs narrated in French and German and a Japanese transcript of the slide program. Before permits were issued, backpackers received verbal warnings on traveling and camping in bear country from a uniformed ranger. Compliance with the backcountry permit system approaches 100% because backpackers were not permitted to board shuttle buses without a backcountry permit.

Bear information was presented at all interpretive programs, guests of the Park Hotel received park newspapers, and weather-resistant plastic signs explaining appropriate food storage were posted in campground bathrooms, on bulletin boards, and on every picnic table. Park staff and volunteers patrolled campgrounds at least 4 times daily to ensure compliance with food storage regulations.

Food and Garbage Storage and Handling.—Prior to 1975, most bears killed or relocated by management had been attracted by improperly stored food and garbage (Dalle-Molle and Van Horn 1989). Frontcountry bear problems decreased after bear-resistant garbage cans and dumps were installed. Beginning in 1982, backpackers camping in areas with a history of bear problems were issued bear-resistant food containers (BRFCs), a 20 x 40 cm hard PVC cylinder. By 1987, bears obtaining anthropogenic food in the backcountry decreased by 95% (Dalle-Molle and Van Horn 1989). BRFC use became mandatory for all backcountry users except mountaineers in 1992. The \$150 fine for non-compliance was enforced.

Dalle-Molle and Van Horn (1989) noted that bears occasionally obtained anthropogenic food while a BRFC was open, and the containers occasionally failed due to improperly latched lids (Dalle-Molle et al. 1986). Since 1991, Denali National Park has replaced many of the older (model 812a) BRFCs with a new model (812c)

BRFCs marketed by Garcia Machine (14097 Ave. 272, Visalia, CA 93292, USA). The new containers were designed to prevent overfilling, had interchangeable lids, carried a lifetime guarantee, and weighed approximately 1.3 kg.

Bear Management Actions.—Front and backcountry areas were sometimes temporarily closed to minimize opportunities for adverse bear-human interactions (i.e., around a large animal carcass). When bears obtained anthropogenic food, the area was closed while the wildlife technicians attempted to observe the bear's behavior and conduct management actions. Depending on their assessment, the area reopened immediately, remained closed for additional observation and management actions, or remained closed until the end of the season. These reactive closures temporarily removed the elements (people and campsites) a bear may have associated with obtaining human food; they also allowed the wildlife technicians to conduct aversive conditioning without endangering park visitors.

Hazing and aversive conditioning were alternatives conducted prior to relocating or killing bears that frequented developed areas or had obtained anthropogenic food. Hazing involved using deterrents such as noise, throwing rocks, shooting cracker shells, or spraying capicum to chase uncollared or untagged bears away from developed areas before they became habituated to the site or obtained human food. If a bear obtained anthropogenic food or continued to investigate developed areas despite repeated hazing, it was radiocollared and subjected to aversive conditioning trials. If radiocollaring and aversive conditioning were logistically impossible, hazing continued.

Aversive conditioning was used to alter the behavior of radiocollared or tagged, food-conditioned bears. After a bear obtained anthropogenic food, the wildlife technicians immediately searched for a bear exhibiting food-conditioned behavior. If the incident occurred in the backcountry, they camped near the incident. After the bear was located, it was radiocollared so it could be located throughout the season and sometimes in subsequent years for aversive conditioning trials. Whenever the radiocollared bear was observed approaching within 30 m of the camp or developed area, it was aversively conditioned with plastic slugs, or cracker shells fired from a 12-gauge shotgun (Dalle-Molle and Van Horn 1989).

Every effort was made to continuously monitor areas with problem bears so hazing or aversive conditioning could occur immediately after these bears exhibited problem behaviors. Altering the behavior of a food-conditioned bear is difficult (McCullough 1982), but there have been some successes (Stenhouse and Cattet 1984, Derocher and Miller 1986, Dalle-Molle and Van Horn 1989). Since Dalle-Molle and Van Horn (1989) completed their report in 1987, 6 bears have been aversively conditioned and at least 9 bears were hazed in Denali National Park and Preserve. Two of the 9 hazed bears had obtained anthropogenic food, but radiocollaring was not logistically possible.

Travel Restrictions.—The road restrictions and bus system generally kept bears and humans apart. All tour and most shuttle bus passengers disembark at designated rest stops only. Shuttle bus drivers would not let hikers disembark within 1 km of a visible bear. Only a limited number of permits to drive private vehicles in the park interior were provided to people with mobility impairments, professional photographers, and people accessing businesses and inholdings in Kantishna.

METHODS

Various methods were used to report bear-human interactions throughout Denali's history. Data from the park's Bear Information Management System (BIMS), case-incident reports, annual bear management reports, management action forms, and field notes from 1979 to 1994 were collected and compiled for this analysis. Bear-human interactions and bear management actions have been recorded using the BIMS since 1978 (Smith 1983). Prior to 1982, most BIMS records documented only interactions during which anthropogenic food was obtained or property was damaged.

The quality and number of reports varied among years due to staff turnover and changing priorities. Bear interactions with overnight backcountry users were reported more consistently than those involving day hikers or frontcountry users because most backpackers were specifically asked about bear encounters when they returned their BRFCs to the visitor center. Based on a comparison between historical and modern records and comments from long-term park and concessionaire employees, we believe many frontcountry interactions were unreported because visitors were not aware of the BIMS reporting system or they believed the interaction was not serious enough to report. Beginning in 1989, a greater effort was made to obtain BIMS reports for less serious bear-human interactions and for interactions that occurred in the frontcountry, on private inholdings, and on mining claims.

In 1993, the standard BIMS form was revised to make it more specific to Denali and a database was developed to store, access, and analyze data. Date, location, bear behavior (Dalle-Molle and Van Horn 1989), habitat type, visitor's activity, visitor's source of bear information, and the type of interaction were included. Interactions were classified as encounters or incidents following Singer (Problem analysis—grizzly bear management, Natl. Park Serv., Anchorage, Alaska, 1982). Because reporting of bear-human interactions was inconsistent during the sampling period, we believe the only interactions reported consistently among years were those in which bears obtained anthropogenic food, caused property damage, or injured people. Therefore, our analysis only considered these incidents. As defined below, BIMS records are classified as encounters, incidents, injuries, management actions, and container tests (Bear-human conflict management action plan, Denali Park, Alaska, 1992).

When evidence suggested that a bear perceived a human presence, it was classified as an *encounter*. Sufficient evidence included a behavioral response or when a human was very close (<20 m) even if the bear showed little reaction.

An *incident* occurred when a bear (1) made physical contact with a human resulting in no physical injury (walked on a human in a tent, touched a human with a paw), (2) obtained anthropogenic food, (3) damaged property, (4) charged a human or approached closely (ran to within 10 m, walked slowly but directly to within 5 m, or approached noise-making humans multiple times within 25 m), or (5) caused a human to take extreme evasive action (climbed a tree, played dead, fired capsicum spray, etc.), whether or not such action was justified. Incidents were divided into cases in which bears obtained anthropogenic food or property damage occurred.

Injuries were all cases in which a bear contacted a human resulting in injury. This included cases in which a human was injured escaping from a bear.

Use of physical force on a bear by park employees including hazing, aversive conditioning, relocation, and destruction were classified as *management actions*. Bears killed in defense of life and property by inholders and visitors were included in this category although these incidents were not always reported.

When a bear attempted to break into a BRFCs, it was classified as *container test*. This did not include instances when bears merely sniffed or lightly bat-

ted BRFCs; nor did it include cases when bears obtained anthropogenic food that was stored outside of a BRFC.

For our purposes, the number of visitors riding shuttle buses was used to index park visitation. Trends in park visitation and bear incidents from 1979 through 1994 were analyzed using linear regression (Sokal and Rohlf 1981). We evaluated the park's bear education program based on where people involved in bear-human interactions learned of appropriate behavior in bear habitat. Hazing was evaluated by monitoring the area where the problem occurred. If there were no additional problems, the management action was considered successful. Aversive conditioning was considered successful if the radio-collared bear stopped approaching camps or developed areas. Container tests were evaluated by comparing the frequency of successes and failures of bears attempting to break into BRFCs.

RESULTS AND DISCUSSION

Education

Of the 329 groups that reported bear-human interactions in 1993 and 1994, 154 (44%) reported no previous knowledge of bears before entering the park and 3 (0.9%) reported that they had received no information on bears. These data suggest in-park distribution of bear information was important because many of the people that interacted with bears learned how to behave during

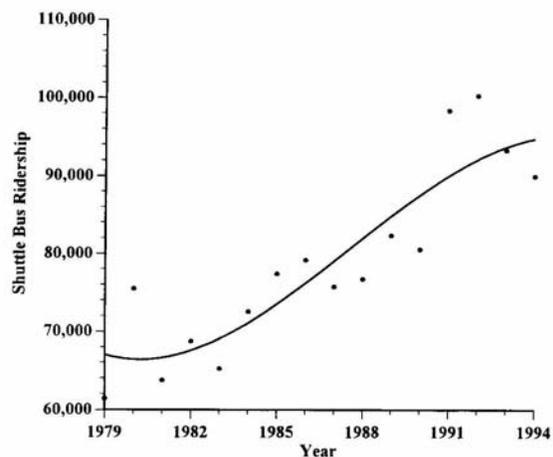


Fig. 1. Shuttle bus use in Denali National Park and Preserve, Alaska, 1979-94. $r^2 = 0.80$, $P < 0.0002$.

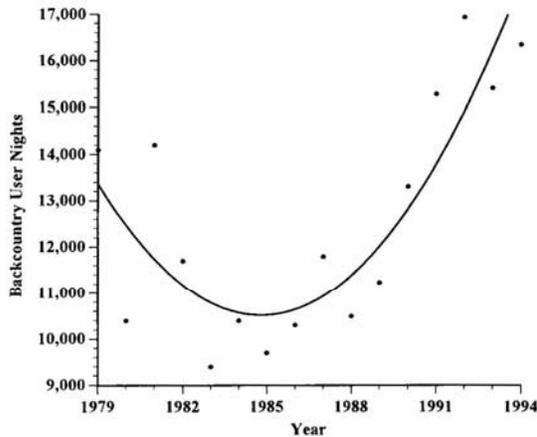


Fig. 2. Backcountry use in Denali National Park and Preserve, Alaska, 1979–94. $r^2 = 0.76$, $P < 0.005$.

a bear encounter from information they received upon entering the park.

All backcountry campers within this group had received information from at least 1 source. Of the people involved in interactions, 65% had viewed the backcountry simulator and 48% had read printed materials on bears. These data indicated it is important to provide multiple sources and formats of information to reach all visitors.

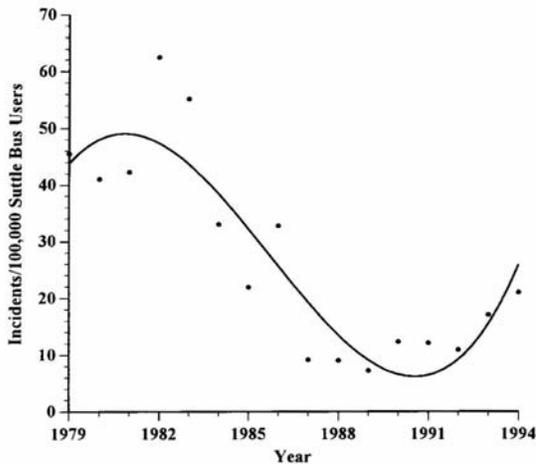


Fig. 3. Total incidents in which bears damaged property or obtained anthropogenic food/100,000 shuttle bus users, Denali National Park and Preserve, Alaska, 1979–94. $r^2 = 0.86$, $P < 0.00001$.

It was also important to have information available in different languages. Among people reporting bear-human interactions in 1993 and 1994, 9.6% were not native speakers of English. Of all overnight backcountry users, 10.1% were not native speakers of English. The victim of 1 of the most serious bear-inflicted injuries in Denali did not speak English.

Incidents

Total park visitation rose from 1979, peaked in 1992, and leveled off through 1994 (Figs. 1, 2). Although the initial increase in Denali visitation after 1979 was accompanied by increased bear incidents (Dalle-Molle and Van Horn 1989), the number of times bears obtained anthropogenic food or caused property damage per 100,000 park visitors declined significantly from 1979 to 1994 (Fig. 3). This general trend indicated that Denali's bear management program effectively reduced bear-human conflict even as visitation levels rose.

Between 1989 and 1994, the number of incidents in which bears obtained anthropogenic food fluctuated from a low of 1 in 1989 to a high of 5 in 1993. These incidents resulted from improperly stored food and garbage on private inholdings, improperly stored food in the backcountry, an open BRFC that was abandoned as a bear approached, improperly stored food in a frontcountry campground, food left on the park road, and an unusual situation in which a black bear obtained food from a mountaineering party camped on

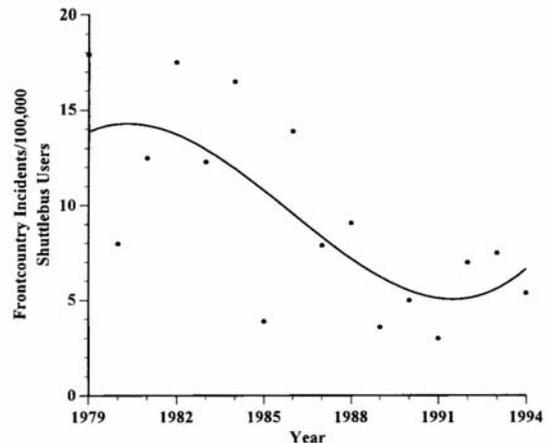


Fig. 4. Frontcountry incidents in which bears damaged property or obtained anthropogenic food/100,000 shuttle bus users, Denali National Park and Preserve, Alaska, 1979–94. $r^2 = 0.52$, $P < 0.01$.

a glacier above an impassable ice fall (the mountaineers were flown in).

Dalle-Molle and Van Horn (1989) attribute the decline in incidents to efforts to educate park users, use of BRFCs, and aversive conditioning. We attribute the recent increase in bear incidents to a few bears that damaged property or obtained anthropogenic food. These bears were not subjected to management actions due to logistical constraints including the inability to find the bear or its close proximity to developments.

Although the proactive components of the Bear-Human Conflict Management Action Plan were primarily responsible for the reduction in incidents, they did not eliminate the need for reactive management actions. The increase in incidents from 1989 to 1993 demonstrated the importance of immediate management actions in response to bear incidents.

Frontcountry.—The rate of frontcountry incidents followed the same general pattern as total incidents (Fig. 4). Among the bear incidents in which bears obtained anthropogenic food in the frontcountry between 1980 (the year The Kantishna Mining District became part of Denali National Park and Preserve) and 1994, 48% (15) occurred on private land or unpatented mining claims in the Kantishna area. Of the management actions in which bears were killed, removed, or killed in defense of life and property, 50% (8) occurred in the Kantishna area.

The concentration of bear incidents in the Kantishna area is due to open garbage dumps, accessible human food, and a propensity for residents to own and use firearms. Denali does not have jurisdiction on private land within the park boundary, and enforcement of the State of Alaska's food and garbage handling regulations was sporadic. Although the majority of landowners in the Kantishna area consistently comply with Denali National Park's food and garbage handling standards, the few that were inconsistent caused most of the bear problems. If more businesses and residences are constructed in the Kantishna area, bear problems may increase. However, Denali National Park has acquired funds to purchase much of the private land in the Kantishna area as it becomes available.

Bears obtained anthropogenic food and were killed in defense of life and property in nearby squatters' camps and towns just outside the park boundary. Since 1992, at least 3 bears were killed in defense of life and property a few miles from the park's eastern border. Other frontcountry incidents and management actions were not concentrated in any single location.

Backcountry.—Trends in backcountry incidents (Fig. 5) showed a pattern similar to the park-wide incidents.

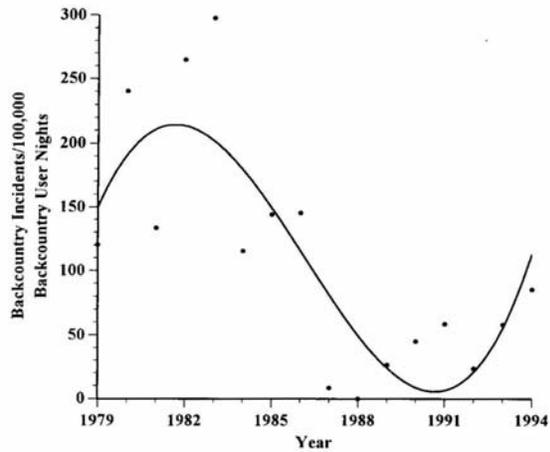


Fig. 5. Backcountry incidents in which bears damaged property or obtained anthropogenic food/100,000 backcountry users, Denali National Park and Preserve, Alaska, 1979–94. $r^2 = 0.69$, $P < 0.002$.

From 1982 to 1988, backcountry incidents declined significantly but increased slightly after 1991. This pattern indicated that the Bear-Human Conflict Management Action Plan was successful, even as overnight backcountry use increased (Fig. 2). Most backcountry

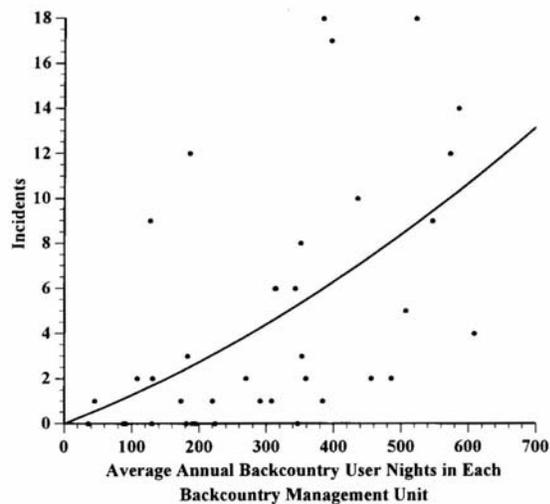


Fig. 6. Average annual backcountry user nights in each backcountry unit plotted against the number of incidents in the backcountry unit, Denali National Park and Preserve, Alaska, 1982–94. $r^2 = 0.29$, $P < 0.005$.

incidents were concentrated in a few units. When 3 outliers were removed from the analysis, a weak but significant correlation existed between the number of incidents in a backcountry unit and the average annual number of user nights in the backcountry unit (Fig. 6). These points were outliers because the management of these 3 backcountry units was different. Two backcountry units that did not have a quota limiting overnight use until 1993 and therefore had high use levels were not included in the analysis. The third outlier was a backcountry unit that was closed for most of the study. Some backcountry units deviated from the pattern displayed in Fig. 6 because they had low overnight use quotas (2–4 people/night) but occurred in an area where bear-human interactions were common. Habitat type and human and bear travel patterns may have affected the rates of bear incidents. It is also plausible that the rate of backcountry incidents was correlated with bear density in each unit. No data exist to support or refute this hypothesis.

Bicycles.—The number of bicyclists using the park road increased from 124 in 1990 to 327 in 1994, as recorded at the Savage River Entrance Station. Many bicyclists entered the park on shuttle buses, traveled the park road at night, or cycled during the spring and fall to avoid traffic, and were not counted; thus we believe this figure is low. To date, 4 BIMS records document bear incidents with cyclists. We also believe this number is low due to under-reporting. One bicyclist was chased “at high speed for 30 m” (Denali Natl. Park and Preserve, unpubl. data) by a female grizzly he had been photographing. Another bicyclist believed that 2 bears feeding near the road were attracted to the sound of his squeaking brakes. One of these bears approached within 2 m. In 2 incidents, bicyclists abandoned their bicycles as a bear approached. In both cases the bears investigated the bicycles and left unrewarded, but 1 left only after being nudged by a vehicle. Shuttle buses occasionally pick up bicyclists when bears are nearby, preventing potential incidents.

Due to the increasing number of bicyclists on the park road and the silent nature of bicycles, the potential for serious bear incidents may be high. Jasper National Park in Alberta, Canada, reported that a cyclist was injured by a grizzly bear during a surprise encounter (History of bear-human conflict management in Jasper National Park, Jasper, Alberta, 1995). Because many cyclists use the road through Denali at off-peak hours, we suggest that a way-side exhibit be installed in a conspicuous location to notify cyclists of appropriate behavior should they encounter a bear. The importance of making noise in areas with low visibility, stopping and slowly retreating, or walking past a bear near the road, and traveling in groups should be stressed.

We recommend cyclists keep their bicycles with them as they retreat from a bear because bears could obtain anthropogenic food from panniers.

Bear-Human Conflict in Other Areas.—Other national parks in North America have experienced similar trends in visitation and bear-human interactions and similar success with bear management programs. In Yellowstone National Park, the number of people injured by bears decreased from an average of 48/year to an average of 1/year and property damage decreased from an average of 98 incidents/year to 14/year between 1931 and 1993 (Gunther 1994). During this period, bear management changed from a hands-off policy of allowing visitors to feed bears, to public education and a strict policy of keeping all human food secure from bears. Glacier National Park implemented a bear management program in 1968 that emphasized visitor education and reducing the availability of anthropogenic food. Due to Glacier’s program, black bear removals declined from an average 10.3/year during the 1960s to 2.6/year between 1990 and 1994; grizzly bear removals declined from 2.0/year to 0.6/year during the same period (Gniadek and Kendall 1998). The bear management program at Yosemite National Park included education, improved food storage, and moderate levels of law enforcement; it resulted in a decrease of black bear incidents in most frontcountry areas (Keay and Webb 1989). Bear removals in Jasper National Park declined from an average of 13.9 black bears and 2.8 grizzlies/year from 1960 to 1969 to 0.8 black bears and 0.4 grizzlies/year between 1990–95 due to garbage becoming inaccessible to bears during the 1970s and 1980s (Ralf 1995). Bear incidents in Shenandoah National Park declined from a high of 257 in 1976 to 13 in 1986 due in part to garbage dump closures and a drop in overnight backcountry use (Garner and Vaughan 1989).

Bear Resistant Food Container Tests

Bears have been documented at campsites with BRFCs over 450 times since 1979 and have attempted to break into BRFCs 55 times. Bears successfully obtained anthropogenic food in 12 of these incidents due to improperly latched or defective lids and overfilled containers. These instances all occurred with the older BRFC model (812a). There have been no reports of bears successfully breaking into the newer model BRFC (812c).

Bear Management Actions

Aversive Conditioning.—Since 1984, 2 black bears and 9 grizzlies were subjected to aversive conditioning (Table 1). In 8 of 11 cases, the bears avoided test camps and did not cause further problems during the season the aversive conditioning occurred. However, 2 bears caused problems

Table 1. Results of aversive conditioning of bears in Denali National Park, Alaska, between 1984–94.

| Bear ^a number | Species ^b /Sex | Number of treatments | Longest conditioned period | Location ^c |
|-----------------------------|---------------------------|-------------------------|-------------------------------|-----------------------|
| 1 | GB/F | 4 | 5 years | BC |
| 2 | GB/F | 2 | 2 years | BC |
| 3 | GB/F | 2 | 2 years | FC |
| 4 | GB/F | 1 | 3 years | BC |
| 5 | BB/M | 2 | 3 days | FC |
| 6 | BB | 2 | 3 years | FC |
| 7 | GB/M | 6 | 2 days | FC |
| 8 ^d | GB | Unknown | 2 years | FC,BC |
| 9 ^d | GB | Unknown | 3 years | FC,BC |
| 10 | GB/F | Unknown | 2 years | BC |
| 11 | GB/M | 7 | 7 weeks | FC |

^a Bears 1–5 appear in a similar table in Dalle-Molle and Van Horn (1989).

^b Species: GB, grizzly bear; BB, black bear.

^c Location: BC, backcountry; FC, frontcountry.

^d Bears 8 and 9 were the offspring of bear 10 and did not obtain any anthropogenic food.

again; 1 bear was killed in defense of life and property 3 days after radiocollaring, and another died of complications during recapture.

Among the frontcountry cases where bears obtained anthropogenic food, 2 of 5 bears subjected to aversive conditioning stayed away from camps and developments during the season the aversive conditioning was conducted. Of the 7 bears subjected to aversive conditioning in the backcountry, 4 avoided camps for at least 2 years. The higher success rate for backcountry aversive conditioning may be due to the ephemeral nature of backpackers' campsites, the low number of people permitted in the backcountry at any given time, and the high compliance with the BRFC program resulting in a low level of food conditioning.

Hazing.—Since 1984, hazing has been documented for 12 bears. In 11 (92%) of these cases, no additional nuisance bear activity was reported in the area during the season the hazing occurred. The bear that continued to display nuisance behavior had obtained anthropogenic food in the backcountry. It stopped approaching test camps, but property damage in the same area was attributed to that bear. Another bear that obtained anthropogenic food from a frontcountry campground was hazed 4 times within 24 hours of its food reward. No additional bear sightings occurred in that campground that season.

These results support Denali National Park and Preserve's guidelines on deterring bears from developed areas. However, the long-term effects of hazing are difficult to evaluate because unmarked bears cannot be identified and a variety of factors can cause a bear to

discontinue using a particular area. However, there are short-term benefits. Hazing can remove a bear from an area where it might obtain anthropogenic food if it were to linger, preventing a curious bear from learning to associate humans and their facilities with food.

MANAGEMENT IMPLICATIONS

Inconsistencies in BIMS limited our ability to analyze data. Future analyses will be improved if the more consistent reporting efforts begun in 1989 are continued. We suggest additional data on the location and number of day hikers using the backcountry be gathered to clarify actual backcountry use. We support a collaboration of bear managers in designing BIMS databases to facilitate inter-area comparisons of bear–human interactions and effects of different bear management programs.

Denali's transportation system offers a broad-scale model for managing large numbers of visitors in an area where the potential for bear–human conflict and resource degradation is high. In 1993, over 204,000 people rode shuttle and tour buses into the park and another 10,000–14,000 rode private buses to lodges in Kantishna. Had the travel restrictions not been in place and all these visitors driven their private vehicles on the park road, it is likely that bear–human interactions would have been much more common. Denali's road restrictions and bus system provide a system for managing a large number of visitors over a large area accessed by a 154-km road in an area with a high concentration of grizzly bears. Many of these bears are habituated to traffic but are not food conditioned (Albert and Bowyer 1991, Schirokauer and Boyd pers. observ.). These restrictions on human activities along with the other components of Denali National Park and Preserve's bear management program continue to keep rates of bear–human conflict low.

LITERATURE CITED

- ALBERT, D.M., AND R.T. BOWYER. 1991. Factors related to bear–human conflict in Denali National Park. *Wild. Soc. Bull.* 19:339–349.
- DALLE-MOLLE, J.L., M.A. COFFEY, AND H.W. WERNER. 1986. Evaluation of bear-resistant food containers for backpackers. Pages 209–214 in R.C. Lucas, ed. *Proc. Natl. Wilderness Res. Conf. U.S. Dep. Agric. For. Serv. Gen. Tech. Rep. INT-212.*
- , AND J.C. VAN HORN. 1989. Bear–people conflict management in Denali National Park, Alaska. Pages 121–128 in M. Bromley, ed. *Bear–people conflicts: Proc. of a Symp. on Manage. Strategies.* Northwest Territ. Dep. Renewable Resour., Yellowknife.

- DEAN, F.C. 1987. Brown bear density in Denali National Park, Alaska, and sighting efficiency adjustment. *Int. Conf. Bear Res. and Manage.* 7:37-43.
- , AND D.K. HEEBNER. 1982. Landsat-based vegetation mapping of Mount McKinley National Park region, Alaska. *Natl. Park Serv. Contract No. CX-9000-6-E084*, Anchorage, Alaska. 198pp.
- DEROCHER, A.E., AND S. MILLER. 1986. Twelve gauge ferret shell test on polar bears, Cape Churchill, Manitoba, 1984. *Northwest Territ. Dep. Renewable Resour.*, Yellowknife. *File Rep.* 54:1-40.
- GARNER, N.P., AND M.R. VAUGHAN. 1989. Black bear-human interactions in Shenandoah National Park, Virginia. Pages 155-161 in M. Bromley, ed. *Bear-people conflicts: Proc. of a Symp. on Manage. Strategies*. Northwest Territ. Dep. Renewable Resources., Yellowknife.
- GNIADK, S.J., AND K.C. KENDALL. 1998. A summary of bear management in Glacier National Park, 1960-94. *Ursus* 10:155-159.
- GUNTHER, K.A. 1994. Bear management in Yellowstone National Park, 1960-93. *Int. Conf. Bear. Res. and Manage.* 9(1):549-560.
- HEEBNER, D.K. 1982. The numerical analysis of vegetation plots in Denali National Park and Preserve. M.S. Thesis, Univ. Alaska, Fairbanks. 243pp.
- , AND M.G. WEBB. 1989. Effectiveness of human-bear management at protecting visitors and property in Yosemite National Park. Pages 145-154 in M. Bromley, ed. *Bear-people conflicts: Proc. of a Symp. on Manage. Strategies*. Northwest Territ. Dep. Renewable Resour., Yellowknife.
- MACHLIS, G.E., AND D.E. DOLSEN. 1989. Denali National Park visitor service project. *Visitor Serv. Proj. Rep.* 18. *Natl. Park Service*, Washington D.C.
- MCCULLOUGH, D.R. 1982. Behavior, bears, and humans. *Wild. Soc. Bull.* 10:27-33.
- MURIE, A. 1981. *The grizzlies of Mount McKinley*. Univ. Washington Press, Seattle. 251pp.
- RALF, R. 1995. History of bear-human conflict management in Jasper National Park 1907 to 1995. *Parks Canada*, Jasper National Park, Alberta. 19pp.
- SMITH, J.K. 1983. BIMS—The bear reporting network for the National Park Service. *Int. Conf. Bear. Res. and Manage.* 5:299-303.
- SOKAL, R.R., AND F.J. ROHLF. 1981. *Biometry*. Second ed. W.H. Freeman and Company, New York, N.Y. 859pp.
- STELMOCK, J.J. 1981. Seasonal activities and habitat use patterns of brown bears in Denali National Park—1980. M.S. Thesis, Univ. Alaska, Fairbanks. 118pp.
- STENHOUSE, G., AND M. CATTET. 1984. Bear detection and deterrent study, Cape Churchill, Manitoba, 1984. *File Rep.* 44. *Northwest Territ. Dep. Renewable Resour.*, Yellowknife.

BEAR-PEOPLE CONFLICT MANAGEMENT IN DENALI NATIONAL PARK, ALASKA

JOHN L. DALLE-MOLLE, National Park Service, Box 9, Denali Park, AK 99755

JOSEPH C. VAN HORN, National Park Service, Box 9, Denali Park, AK 99755

Abstract: Bear-people conflicts in Denali National Park increased dramatically during the 1970's as visitation to the park rose 7-fold. Incidents of property damage, bears obtaining human foods, charges, and injuries increased from less than 1/year prior to 1972 to a high of 37 in 1982. In 1982 a comprehensive effort was begun to reduce incidents. The bear-people conflict management plan was substantially revised. Two seasonal wildlife technicians were added to the park staff to work exclusively on the problem. Portable bear-resistant food containers were distributed to backpackers. Aversive conditioning was used on bears that had obtained food from back-country camps. As a result of this emphasis on preventative actions, since 1982 no management relocations or killing of bears have been necessary. Incidents have decreased by 81% parkwide, 60% in developed areas and 92% in the back-country. The number of incidents involving property damage decreased 88%. Monetary losses from damages declined 93%. Incidents of bears obtaining human food or garbage have decreased 95%.

Bear-People Conflicts - Proc. of a Symposium on Management Strategies (1989). Northwest Territories Dept. of Renew. Res.

Rapidly increasing visitation in national parks in the 1970's was accompanied by increases in bear-people conflicts (Martinka 1982). Visitation to Denali National Park doubled in 1972 when a paved state highway reached the park. Incidents of property damage, charges, injuries, and bears obtaining human foods increased from less than 1 per year prior to 1972 to 36 by 1982. This paper describes the management actions taken to reduce the incidents and the results of those actions.

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BACKGROUND

Denali National Park and Preserve consists of about 24,000 km² in south-central Alaska. Elevations range from 122 - 6,194 m, culminating in North America's highest peak, Mount McKinley. The lower areas consist of taiga dominated by black spruce (*Picea mariana*), white spruce (*P. glauca*), paper birch (*Betula papyrifera*), and quaking aspen (*Populus tremuloides*), with numerous lakes, streams and bogs. The foothills of the Alaska Range are chiefly covered by shrub communities of willow (*Salix* spp.) and dwarf birch (*B. glandulosa* and *B. nana*), with moist areas of cottongrass (*Eriophorum* spp.). Tundra plants such as mountain avens (*Dryas* spp.) and sedges (*Carex* spp.) are found on the mountain slopes to about 1,500 m, above which rock and glaciers predominate.

Grizzly (*Ursus arctos*) and black bears (*U. americanus*) inhabit the park. Grizzlies are most abundant in the foothills and mountains, while black bears rarely leave the forested lower terrain.

Most visitor use of Denali occurs along the 154 km gravel road that traverses the foothills and lower slopes of the north side of the Alaska Range. Transportation is primarily by shuttle and tour buses (Singer and Beattie 1986). At the east end of the road there are hotels and other services both in and out of the park. At the west end of the road there are a few lodges and a mining district. Seven campgrounds are located along the road.

Easy accessibility and open country make hiking into the back-country popular. There are no designated trails or campsites and use is dispersed throughout the open terrain. Hikers follow the broad, glacial river valleys or tundra ridges and slopes of the mountains. The area accessible from the road has the best grizzly bear habitat in the park. Dean (1987) estimated the minimum grizzly bear density for this area as 1 bear/44 km².

THE PROBLEM

Prior to 1972, bear-people conflicts in the park were not considered a serious management problem. Many years no incidents were recorded. From its establishment in 1917 (as Mount McKinley National Park) through 1971, only 4 injuries to people were reported. Ranger reports seldom mentioned problems. Adolph Murie studied

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wildlife in the park for many years between 1939 and 1970. Bear-people conflicts are rarely mentioned in his book on the park's grizzlies (Murie 1981).

In 1972 this situation changed with the opening of the state highway to the park. With the increase in recreational visits, bear-people conflicts increased (Table 1). By 1978 a bear incident reporting form was developed, rangers were equipped with immobilizing drugs, and a bear-human conflict management plan was prepared. In 1978, park staff reported 79 interactions.

Prior to 1982 a major management response to bear-people problems had been to remove the bears (Table 1). Open garbage dumps and poorly stored food attracted bears and led to most of the management relocations and removals prior to 1975. That year all dumps but 1 were closed. The 1 which stayed open was fenced, and in 1980 was replaced by a large holding tank from which garbage is trucked to a state landfill 100 km from the park.

Although bears were being denied garbage, problems continued to increase. Part of the problem was the sheer number of people in bear habitat. Unexpected encounters with bears resulted in defensive reactions by bears, such as charges. Bears were finding back-country campers' food caches, approaching campers who were cooking, or obtaining food from packs dropped by hikers during encounters (Table 2). Bears obtained poorly stored food or unprotected garbage on privately owned lands within or adjacent to the park, and then caused problems in the park. Some bears were killed by private landowners. Park regulations are not enforceable on private inholdings.

Efforts to educate campers about food storage and behaviour in bear country were made when people picked up their permits. As only 7% of back-country campers did not get a permit (Plager and Womble 1981), rangers were able to personally distributed written information and talk to most campers. Areas where conflicts had occurred were frequently closed to visitor use for weeks at a time. State regulations for food and garbage protection on private inholdings were not enforced until after a problem had occurred and a complaint had been lodged with state officials. Even then, the cause of the problems was rarely permanently corrected.

Despite dump closures, visitor education, area closures, and relocation or destruction of bears, overall problems did not decline. In 1982, the park began to evaluate its

Table 1. Annual visitation, injuries, incidents, and bear removals, Denali National Park, Alaska, 1917-1986.

| Year | Visitors | Injuries | Incidents | Bears Removed ^a |
|---------|------------|----------|-----------|----------------------------|
| 1917-70 | <40,000/yr | 4 | <1/yr | 28 |
| 1971 | 45,000 | 0 | 0 | 2 |
| 1972 | 89,000 | 1 | 2 | 1 |
| 1973 | 137,000 | 3 | 4 | 1 |
| 1974 | 160,000 | 0 | 5 | 1 |
| 1975 | 161,000 | 1 | 10 | 1 |
| 1976 | 158,000 | 0 | 10 | 4 |
| 1977 | 170,000 | 1 | 21 | 2 |
| 1978 | 223,000 | 0 | 29 | 2 |
| 1979 | 287,000 | 0 | 28 | 4 |
| 1980 | 318,000 | 3 | 29 | 1 |
| 1981 | 262,000 | 0 | 25 | 1 |
| 1982 | 322,000 | 1 | 36 | 1 |
| 1983 | 346,000 | 0 | 31 | 0 |
| 1984 | 394,000 | 0 | 25 | 0 |
| 1985 | 436,000 | 2 | 21 | 0 |
| 1986 | 530,000 | 0 | 23 | 0 |
| 1987 | 575,000 | 2 | 7 | 0 |

^a Management relocations or kills.

Table 2. Back-country camper-nights, injuries, and incidents, Denali National Park, Alaska, 1971-1987.

| Year | Camper-Nights | Injuries | Incidents |
|------|---------------|----------|-----------|
| 1971 | 2200 | 0 | 0 |
| 1972 | 3500 | 1 | 0 |
| 1973 | 4000 | 2 | 0 |
| 1974 | 4000 | 0 | 3 |
| 1975 | 5800 | 1 | 2 |
| 1976 | 6800 | 0 | 2 |
| 1977 | 8300 | 0 | 10 |
| 1978 | 10000 | 0 | 23 |
| 1979 | 14100 | 0 | 19 |
| 1980 | 10400 | 2 | 25 |
| 1981 | 14200 | 0 | 21 |
| 1982 | 11700 | 1 | 26 |
| 1983 | 9400 | 0 | 22 |
| 1984 | 10400 | 0 | 12 |
| 1985 | 9700 | 0 | 14 |
| 1986 | 10300 | 0 | 14 |
| 1987 | 11800 | 2 | 3 |

actions and establish a comprehensive program of problem analysis, planning, and field management actions.

PROBLEM ANALYSIS

Denali's Resource Management Plan, a basic planning, programming and budgeting document, identified the need for conducting a problem analysis. The analysis used bear incident records collected by park staff (F. J. Singer, unpubl. rep., National Park Service, Anchorage, 1982). Key findings from this analysis were:

1. Problems in the front-country (the area within 0.5 km of roads or developments) seemed to have stabilized as sanitation management improved.
2. Problems in the back-country (the area more than 0.5 km from front-country) were increasing very rapidly, and the incident rate of 90 per 100,000 visitor-nights was extremely high compared to other parks with grizzlies. This situation was primarily due to inability of campers to secure their food, as 58% of cases were related to a food incentive at the campsite.

The number of bear incidents was significantly correlated to total visitation within back-country units. Interactions increased rapidly after a unit exceed 500 - 800 visits/year.

Recommendations were made for improving data collection, establishing clear decision guidelines for management action, setting research priorities, and testing the effectiveness of various management actions.

PLANNING

Concurrent with the problem analysis, planning was undertaken to revise the Bear-Human Conflict Management Action Plan. Findings from the problem analysis were then incorporated in this plan. Action plans are the operational parts of the Resource Management Plan. Planning was based on these policies:

1. The causes, not just symptoms, of problems must be treated. Total elimination of unnatural food rewards and management of human use must be the first priorities.
2. If these fail, aversive conditioning of bears will be tried before bears are removed or destroyed.
3. Attempts must be made to determine a bear's behaviour during an incident. Bears acting

defensively or from natural curiosity while foraging will not be manipulated, unless conditioning to unnatural foods is likely to result.

The park's current plan contains a modification of the elements recommended by Taylor (1984) for bear management plans. The elements of our plan are objectives, organization structure, evaluation, monitoring, education, staff responsibilities, enforcement, regional management, budgeting, food and waste management, management actions in response to interactions, and research and training.

The plan also lists clear decision criteria to determine when action must be taken against a bear. These are used to determine the type of interaction that has occurred, the bear's behaviour, whether it is acceptable or not, and the appropriate response (Table 3).

A set of field guidelines further describes the specific management actions to be applied in a stepdown manner for 10 types of bear-human interactions that have often occurred in Denali. For example, if a bear is observed within ½ km of a developed area, extra warnings are made and patrols for sanitation problems are increased. If the bear starts to stay around facilities or people even though no food is obtained, a thorough review is first made of all reports to try to determine if the same bear is likely involved in each case. If so, the next step is to observe the bear's behaviour. We try to deter the bear from the area if it continues its pattern and appears likely to eventually become a conditioned bear. If that fails, and the bear becomes conditioned, the plan calls for radio-collaring the bear and trying aversive conditioning. Relocating the bear would be the next step, and finally if all else failed, destruction.

The plan has also assigned clear lines of responsibility, and annual evaluation, modification, budgeting and staffing are accomplished so the program receives consistent high priority.

The park's Wilderness Recreation Management Action Plan controls the extent and distribution of back-country visitor use. The park is divided into 44 units. Limited numbers of campers are allowed in each, with controls based on such factors as impact to vegetation, perceived crowding, disturbance to wildlife, and prevention of bear-human incidents. Only 2 - 8 people are permitted to camp in most units each night.

A study of the park's efforts to educate visitors in bear country was one element of our plan. Sundstrom (1984) found 74% of visitors knew the proper precautions for

Table 3. Criteria used in Denali National Park, Alaska to determine when a bear's behaviour in the presence of people requires management action towards the bear.

| Behaviour Category | Human-Bear Interaction | Management Response |
|--------------------|--|--|
| Foraging | | |
| Curious | Bear shows inquisitiveness one time to identify a scent or object, then moves away. | None |
| Mistaken prey | Person acting like normal bear prey, or bear attacks in brush where it has been preying on moose calves, etc. | None |
| Defensive | | |
| Dominance | Bear challenges intruder of its personal space by approaching, charging, or body language displays. | None |
| Surprise | Close, unexpected encounter; bear reacts, then leaves once person is no longer considered a threat. | None |
| Provoked | Person intentionally approaches close or harasses bear. Bear reacts, then leaves immediately. | None |
| Habituated | | |
| Tolerant | Bears in areas also used by people; tolerates people nearby but ignores them and their facilities. | Monitor Deter |
| Conditioned | Repeat interest in people or their facilities; if allowed to continue, likely will result in obtaining unnatural food or will approach people or facilities. | Aversively condition Relocate Remove |
| Rewarded | Bear has obtained unnatural foods. | Aversively condition Relocate Remove |
| Aggressive | | |
| Threat | Made repeated nondefensive charges or caused injury. | Destroy |
| Predation | Kills and consumes victim. | Destroy |

avoiding conflicts with bears. The park's efforts significantly increased their knowledge; however, many visitors did not apply that knowledge. This indicated the park should make a major effort to convince visitors of the critical need to apply their knowledge. Park and concession employees had lower behaviour scores than visitors, pointing out the need for stronger attention to that group. As a result of this study, changes have been incorporated in the plan to increase the time spent with hikers explaining proper behaviour, and to increase training of employees. An experimental interactive computer system (Cuillard 1987) is being developed where hikers can place themselves in various simulated situations with bears, choose their behaviour and see the bears' reactions. If they choose wrong, they will see the consequences and be given the correct information.

Efforts to prevent problems on private lands within and adjacent to the park consist of monitoring garbage handling, offering assistance with designing appropriate bearproof facilities, and encouraging better state regulations and strong enforcement.

FIELD MANAGEMENT ACTIONS

Special Staff

In 1982 a biological technician was hired in the summer for bear-human conflict management. Since 1983 there have been 2 technicians. Their duties are to immediately respond to bear-human conflicts, investigate them, attempt to identify the bear involved, and take action according to the Bear-Human Conflict Management Action Plan. Because their time is dedicated solely to this work, they can stay with a situation continuously for days if needed. In the past when rangers had to deal with such problems they were often called away to perform other duties. The "bear techs" also patrol areas such as the park hotel, housing, campgrounds, and similar developed areas outside the park boundary for litter problems. They help train employees of the park and local businesses in safe practices in bear country. In the past we often could not investigate rumours of conflicts, but the bear techs now have the time to do this. This has resulted in greater knowledge of the actual number of problems and the details regarding them.

Bear-Resistant Food Containers

In 1982 we began a program aimed at reducing food-related problems with bears. Field tests were conducted to find a portable plastic food container for backpackers

that would be resistant to bears. There are no trees for hanging food in much of the park, so hikers cached food on the ground where bears easily found it. Bears learned to seek out such food and to damage packs and tents while searching for food. Containers have been loaned to backpackers going into areas which have historically had the most problems. Containers have proven very effective in reducing problems and visitor acceptance of them has been very high (Dalle-Molle et al. 1986).

During 1982 through 1987, bears were reported present at sites a minimum of 106 times when containers were in use. Bears obtained food 20 times due to: 5 failures of early models of containers, 5 lids not latched completely by users, and 10 instances of food left outside the container, usually while people were cooking when a bear approached.

Deterring and Aversively Conditioning Bears

Park policy is to remove bears only as a last resort. Therefore, efforts are made to deter bears from sites before they obtain unnatural food, and to modify behaviour of bears conditioned to such food. We recognize that it is difficult to change the behaviour of a bear whose efforts have gained it a food reward in the past (McCullough 1982), but some success has been reported (Stenhouse and Cattet 1984; Derocher and Miller 1986).

Our plan calls for deterring bears from developed areas, before they become conditioned to unnatural foods, by making noise, firing cracker shells, or shooting them with soft plastic slugs fired from a 12 gauge shotgun. The slugs cause discomfort to the bear but bounce off. They have caused only minor localized tissue damage to the 2 bears we have examined.

When a bear is conditioned to unnatural food, we try to aversively condition it to avoid sites which it has associated with unnatural food rewards. As soon as a bear is reported to have obtained unnatural food, we go to the site. If there is a bear at or near the site, we observe its behaviour to see if it acts like a food-conditioned bear, that is, if it approaches the camp or people directly, is not deterred by noise-making and arm-waving, and fits the description of the bear involved in the incident. If it meets these criteria, we assume it is the bear that obtained food. We immobilize it by darting, and radio-collar it. If the incident happened at a developed site and the bear returns to the site or other similar sites, we shoot it with soft slugs. If the incident happened to back-country campers, we locate

the bear about once a month throughout the summer and set up a tent simulating a backpacker's camp where the bear may notice it. If the bear approaches within 30 m of the camp, it is shot with a slug. We remain quiet inside the tent so the bear will hopefully associate the unpleasant experience with the camp rather than people, as bears have often raided camps at night or when hikers were away. We vary the model, colour and number of tents used. The behaviour of the bear is recorded from the time it notices the camp until it had moved 1 km away from the site.

Table 4. Aversive conditioning of bears in Denali National Park, Alaska 1984-1987.

| Bear No. | Sex | No. of tests | Reaction ^b | | | No. times shot | Longest conditioned period ^c |
|----------|-----|--------------|-----------------------|----|---|----------------|---|
| | | | DA | ID | A | | |
| 1 | F | 17 | 2 | 7 | 8 | 4 | 3 years |
| 2 | F | 5 | 3 | 0 | 2 | 2 | 1 year |
| 3 | F | 10 | 1 | 3 | 6 | 2 | 1 year |
| 4 | F | 3 | 1 | 0 | 2 | 1 | 3 years |
| 5 | M | 3 | 2 | 0 | 1 | 2 | 3 days |

^a Bears 1-4 are grizzlies; 5 was a black bear; 3 had cubs with her during her last season of tests.

^b Reaction to test. DA = Direct approach to test camp, essentially a straight line, no hesitation. ID = Indirect approach, circuitous, slow; A = Shows awareness of and avoids test camp.

^c Longest time bear avoided test camps after aversive conditioning.

Five collared bears have been subjected to this form of aversive conditioning (Table 4). Three of these grizzlies and the black bear are known to have obtained food from back-country campers, acted unafraid of people making noise, and approached camps directly without hesitation. The history of bear number 4 is unknown. When we first encountered her, she behaved like food-conditioned bears in her direct approach, which was not deterred by yelling and waving, so we concluded she too had been getting campers' food. It is possible her behaviour was related to her extreme old age, and not conditioning to unnatural food. These radio-collared bears now act much more wary when near a camp than when the aversive conditioning first began. When they have made subsequent approaches, they have done so more indirectly and slowly than previously. Two have not approached our test camps in the past 3 consecutive seasons, and 2 have not approached the test camps in the past season.

After being shot at a lodge, bear 5 moved to a mining camp 1 km away and ate a large amount of meat left overnight in an open truck. It was killed by residents, ending our brief attempts at aversive conditioning.

In addition to the radio-collared bears, a black bear sow and 2-year-old cub broke into a developed site and got food. They kept returning over a 3-day period and were shot 5 and 4 times respectively, after which they ceased returning. A noncollared grizzly got food from construction workers and was scared off by a car horn and siren. A week later it was back at the site. During 2 days it was shot twice with slugs, and cracker rounds were also fired. It did not return until the following summer, when it was seen at this site once but did not cause problems. However, a bear fitting its description did approach vehicles and people on foot along a stretch of the road 5 km away.

DISCUSSION

Since the current efforts started, there have been decreases in every category we use to monitor the program's success (Table 5). In addition we have not had to relocate or kill any bears (Table 1). The decreases are likely even greater than shown, as incidents prior to 1983 were probably under-reported given the smaller staff available to track down reports. The decrease in problems occurred despite continually increasing visitation (Table 1) and the initiation in 1983 of several maintenance and construction projects that have put additional people in bear habitat. The decrease may in part be due to a 17% decline in back-country use since 1981, although the decrease in problems continued even in the years when use went back up (Table 2). The trend indicates continued success, although more remains to be done to further reduce problems.

Table 5. Number and percent decrease in bear-people conflicts in Denali National Park between 1982-1987.

| | Percent | | |
|--------------------------------|---------|------|----------|
| | 1982 | 1987 | Decrease |
| Parkwide incidents | 36 | 7 | 81 |
| Back-country incidents | 26 | 2 | 92 |
| Front-country incidents | 10 | 4 | 60 |
| Closure days | 176 | 38 | 78 |
| Property damage incidents | 24 | 3 | 88 |
| Property damage costs (U.S.\$) | 3030 | 220 | 93 |
| Bears obtaining food/garbage | 19 | 1 | 95 |

Although no bears obtained food from backpackers in 1987 for the first time in many years, additional containers are needed so that all backpackers can use them to prevent future food-conditioning of bears. Greater effort must be made to stress to users the importance of putting food in the containers and latching the lid correctly if they see a bear. Failure to do so has been a major cause of bears obtaining food. All injuries but 1 since 1980 have been due to surprise encounters or to photographers approaching too close to bears. Visitors must be better informed about the hazards of hiking in areas of restricted visibility, and education and enforcement of standards for photographers must increase. The value of deterrents and aversive conditioning, and their long-term implications to bear behavior and habitat use, must be evaluated further. The role of habituation of Denial's bears to humans must be studied to determine if problems will occur with bears that are not conditioned to unnatural foods. New state regulations for proper food storage on private land, and stronger enforcement of existing garbage disposal regulations, are needed to prevent unnecessary killing of bears.

LITERATURE CITED

- CUILLARD, J.D. 1987. Computers in the wilderness. *Courier* 32(2):15-16.
- DALLE-MOLLE, J., M. A. COFFEY, and H. W. WERNER. 1986. Evaluation of bear-resistant food containers for backpackers. Pages 209-214 in R. C. Lucas, compiler. *Proc. Natl. Wilderness Research Conf. Gen. Tech. Rep. INT-212*, Intermountain Res. Station, Ogden, UT.
- DEAN, F. C. 1987. Brown bear density in Denali National Park, Alaska and sighting efficiency adjustment. *Int. Conf. Bear Res. and Manage.* 7:37-43.
- DEROCHER, A. E., and J. S. MILLER. 1986. Bear deterrent study (twelve gauge Ferret shell tests) Cape Churchill, Manitoba 1984. File Rep. No. 54. NWT Dept. of Renewable Resources, Yellowknife.
- MARTINKA, C. J. 1982. Rationale and options for management in grizzly bear sanctuaries. *Trans. North Am. Wildl. and Nat. Resour. Conf.* 47:470-475.
- McCULLOUGH, D. R. 1982. Behavior, bears, and humans. *Wildl. Soc. Bull.* 10:27-33.
- MURIE, A. 1981. *The grizzlies of Mount McKinley*. Univ. Washington Press, Seattle. 251 pp.
- PLAGER, A, and P. WOMBLE. 1981. Compliance with backcountry permits in Mount McKinley National Park. *J. For.* 78:155-156.
- SINGER, F. J., and J. B. BEATTIE. 1986. The controlled traffic system and associated wildlife responses in Denali National Park. *Arctic* 39(3):195-203.
- STENHOUSE, G., and M. CATTET. 1984. Bear detection and deterrent study Cape Churchill, Manitoba, 1983. File Report No. 44. NWT Dept. of Renewable Resources, Yellowknife.
- SUNDSTROM, T. C. 1984. An analysis of Denali National Park and Preserve's management program to educate visitors regarding behavior while in bear country. M.S. Thesis, Univ. Wyoming, Laramie. 291 pp.
- TAYLOR, J. S. 1984. Bear management plans in Canadian National Parks: fifteen essential elements. M.S. Thesis, Univ. Calgary, Calgary, Alberta. 347 pp.

Appendix P. Educational Materials

Bear Encounter Brochure



© Heidi Barker

Bear Encounters

Traveling in Bear Country

When you venture into bear country, you must be willing to accept these wild creatures on their own terms. You have chosen to risk the possibility of encountering wild grizzly bears and black bears. Although there are no guarantees of safety, by being perceptive and non-threatening, you can minimize the chances of being involved in a dangerous confrontation with a bear. For your own protection and to keep Denali's bear population healthy and wild, please carefully read and abide by the following guidelines.

- **Stay Alert - Avoid bears**

Bears can be anywhere, even near populated areas or around buildings. Look for footprints and large droppings. Stay alert and watch for movement across the landscape. Try to hike in open areas, either along wide river channels, or in the alpine tundra. This open habitat affords you the opportunity to spot a bear before it sees you. Be aware of wind direction because bears rely heavily on their sense of smell. Stay upwind of thickets so the bear has a chance to smell and hear you. Never approach carcasses; a defensive bear is likely to be in the area. Be especially alert for bears in berry patches. If possible, detour around areas with high concentrations of berries. When you observe a bear, look for others; females often have cubs with them. Female grizzlies aggressively defend their cubs, therefore, never get between a female and her cubs. Be prepared to alter your route if you sight a bear. Never approach a bear or attempt to pressure it to move out of your way. Always give bears the right of way.

- **Make Noise**

When visibility is limited, such as in forested or brushy areas, bears may be difficult to see. A bear may also be less likely to sense a human presence. Make a variety of noises (loud talking works well) to alert bears of your presence. When given the opportunity, a bear will often move out of the way. Whistling is not recommended because a bear may perceive the sound as a prey animal. Sound does not travel well on windy days or near running water. Compensate for these conditions by altering your route and increasing the amount of noise you make.

- **Camping and Food Handling**

In the back-country, cook and store food at least 100 yards (100 meters) downwind from your tent, in an area with good visibility in all directions. Keep an eye out for approaching bears while preparing food. Be prepared to put all food away quickly when a bear is observed. Avoid cooking greasy or odorous foods. Do not sleep in the clothes you wore while cooking. When spending the night in the back-country, always store your food and garbage in a bear resistant food container.

In the roadside campgrounds, all food, beverages, containers, pet food, coolers, and cooking utensils must be stored in a closed, hard-sided vehicle, or in campground food-storage lockers when not in use. Trash must be stored in the same manner as food or deposited in a bear-resistant garbage can. Scrape unwanted food from pots and plates into a bear-resistant garbage can. **Never** leave food, containers, or garbage unattended. Bears are often destroyed when they become persistent in seeking out human food.

- **If You Encounter A Bear**

Do not run. Bears can run faster than 30 mph (50 km/h), even faster than Olympic sprinters. Running is likely to elicit a predatory chase response from an otherwise non-aggressive bear. If the bear is unaware of you, detour away from it. Give the bear plenty of room, allowing it to continue its own activities undisturbed. If the bear is aware of you but has not acted aggressively, back away slowly while keeping an eye on the bear, talk in a calm, firm voice while slowly

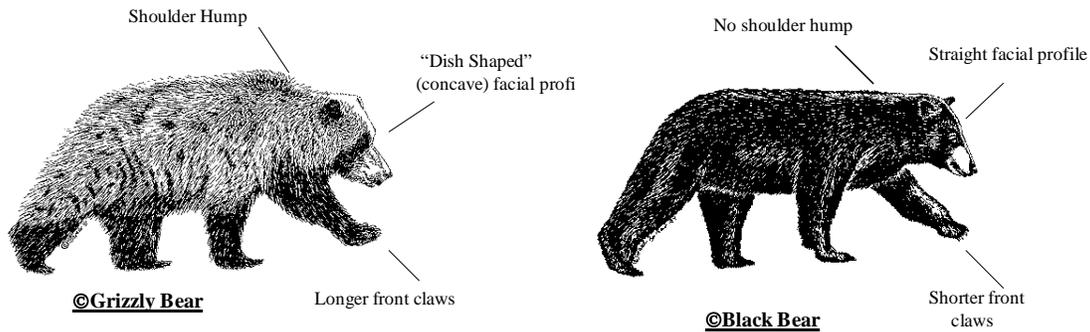
waving your arms above your head. These actions will help the bear confirm that you are a human and not a prey animal. Grizzly bears do not normally prey on humans. A bear that stands up on its hind legs is not acting aggressively, but is curious and is trying to identify you. Help it out by following the above guidelines. Scientific evidence clearly indicates that when given the opportunity most bears will avoid humans.

- **If A Bear Approaches or Charges You**

Do not run: do not drop your pack. A pack can help protect your body in case of an attack. Dropping a pack may encourage the bear to approach humans for food in the future. Most charges are bluffs, sometimes coming to within 10 feet (3 meters) of a person before stopping or veering off. Stand still until the bear stops and has moved away, then slowly back off. Due to the small size of the trees in the sub-arctic, climbing a tree may not provide protection.

- **If A Grizzly Bear Attacks**

The grizzly's ferocious reputation arises largely from the fact that a female grizzly will aggressively defend her young. Most attacks are defensive, therefore, if a grizzly bear does actually make contact with you, drop to the ground and play dead. However, do not play dead before contact is imminent, as it may elicit a curious approach from the bear. Leave your pack on and put your arms around the back of your head and neck for protection. The majority of charges are from female grizzlies protecting their young. By playing dead you will neutralize the threat that you represent to the bears cubs. However, if the attack is prolonged fight back vigorously because the bear may be preying on you.



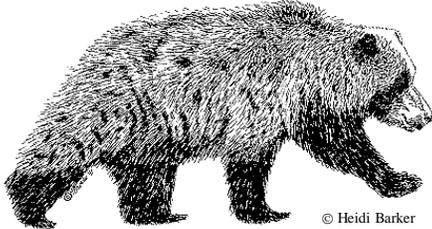
- **If A Black Bear Attacks**

If you are being approached or followed by a black bear, aggressively chase the bear away, even if it is a female with young. Black bears have been known to stalk and prey-on humans in a few isolated incidents. Black bear attacks are rarely defensive. Females will generally send their cubs up a tree in order to protect them rather than aggressively defend them. If attacked by a black bear fight back vigorously.

- **Tell a Ranger**

Please report all bear encounters to a ranger. This information is used for management and research on bear-human interaction.

Camping and Bears Brochure



© Heidi Barker

CAMPING AND BEARS

For the safety of bears and people please follow these simple guidelines while camping at Denali National Park:

-  **NEVER LEAVE FOOD UNATTENDED**, even for a short time. Always store food in vehicles or food lockers located in the campgrounds.
-  If a bear or wolf approaches, gather up all food and slowly back away to your vehicle.
-  When preparing meals, bring out only what you plan to eat immediately. Think about what to do if a bear approaches and discuss the plan with your partners.
-  Dispose of waste food, wrappers, containers, and food particles in bear proof trash cans only.
-  Never feed wildlife of any kind (including gulls, squirrels, and foxes).
-  Please do not burn trash in campfires.
-  Keep dogs on a leash at all times. They may be walked on the road only. Do not leave them outside unattended.
-  Report possible food/garbage problems to campground host or ranger.
-  Dispose of gray water at the following locations:

Riley Creek Campground has gray water sinks near the restrooms. Clean food particles out of and rinse sinks, dispose of food particles in bear proof trash cans, and close doors when you leave.

Savage Campground ... dump gray water in the flush toilets, not in portable toilets.

Teklanika Campground has gray water basins near the restrooms. Please clean food particles out of basin and rinse with water from a spigot.

Sanctuary & Igloo Campgrounds ... remove food particles from gray water and dispose of in bear proof trash cans. Disperse cleaned gray water in bushes away from campsites.

Wonder Lake Campground has a gray water sink at the restroom building. Clean food particles out of and rinse the sink well.

Fortunately the bears at Denali rarely get human food or garbage and therefore are not as likely to seek contact with people. Please help us to continue this unique situation. See the [Denali Alpenglow](#) for additional bear safety information. Thank you.

Created 6/9/03

Campground Informational Sign



CAMPING AND BEARS

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Report possible food/garbage problems to campground host or ranger.



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Fortunately the bears at Denali rarely get human food or garbage and therefore are not as likely to seek contact with people. Please help us to continue this unique situation. See the [Denali Alpenglow](#) for additional bear safety information. Thank you.

Bear Information on Denali's WEB site – text only:

<http://www.nps.gov/dena/home/visitorinfo/bearsafety/home.html>

Safety in Bear Country

I. Minimizing Bear - Human Conflicts is a priority responsibility of all park and concession employees. We all need to watch for situations that could lead to conflicts.

* Food/garbage handling or storage problems

* Inappropriate human behavior around bears

II. How do we avoid problems with bears?

FRONTCOUNTRY

(Hotel, H.Q., roads, campgrounds)

1. Prevent all food and garbage problems

- Keep housing and hotel areas clean
- No food, beverages, coolers, or dirty grills left outside; not even empty cans or coolers
- Always use bear-proof trash cans and dumpsters.
- Never leave trash beside a full can.
- BE RESPONSIBLE. Report or correct problems.

2. Stay aware of bear activity

- Bears commonly use frontcountry areas
- Watch for bear sign: tracks, scat, kills
- Respect posted warnings. Removing signs endangers people and bears.

3. Be careful on roads and trails.

- Stay alert and make noise while hiking or biking
- If you encounter a bear while bicycling
 - a) Do NOT try to outrun the bear
 - b) Keep food with you
 - c) Keep bike with you. Hold bike between you and the bear. Back away slowly.

BACKCOUNTRY

1. Watch for bear sign. Recognize prime feeding areas and avoid them if possible, i.e., berry patches.

2. Bears travel along trails and rivers. Watch for natural bottlenecks that could funnel bears into your camp.

3. Avoid surprising bears. Travel in the open when possible. Make noise when visibility is limited.

4. Travel/camp with one or more companions. More eyes can watch for bears. Conversation is a good way to alert bears to your presence. Bears are less likely to approach groups.

5. Never approach a bear. Get out of the way or detour widely if you have that option, especially if a bear is not aware of you.

6. When a bear sees you, let the bear know that you are human. Wave your arms over your head and speak in a firm, even tone. Back away slowly.

7. If a bear approaches, **HOLD YOUR GROUND, DON'T RUN, AND DON'T DROP YOUR PACK.** Back away slowly if the bear stops.

8. Never play dead unless a bear actually makes contact with you, then keep your pack on, pull your knees up toward your chin and stay as quiet as possible.

9. Never cook or eat in or at your tent. Listen carefully to the information given at the back-country desk about setting up your camp.

10. Avoid eating or storing food where visibility is limited. Be prepared to re-pack all food, even cooked food, in your BRFC and lock the lid at a moment's notice.

OTHER WILDLIFE:

Denali is considered a pristine wilderness, and you will very likely encounter wildlife while in the backcountry. Please keep Denali's animals wild for others to enjoy by following these basic guidelines when encountering wildlife:

Do not feed wildlife.

Do not approach or follow wildlife.

If your presence alters an animal's behavior, you are too close.

Bear Safety Precautions for Researchers and Contractors

Researchers and contractors working in Denali National Park and Preserve are required to follow the same regulations and guidelines concerning bears as other visitors to the park.

Under no circumstances are bears to be approached or harassed. Except for specific, documented bear management or bear research purposes bears should not be approached. The only other possible exception is for defense of life or property.

All food and food waste must be stored and disposed of in a bear proof manner. This includes all canned goods, MREs, and beverages. Acceptable storage areas are hard-sided vehicles or buildings, bear resistant food canisters (BRFCs), locking metal drums, or bear proof garbage cans. For any long term or over-night work in the park this type of storage is required. Coolers are not acceptable, even when stored on vehicle roofs. Food carried on day hikes must not be left unattended.

Guns are illegal in the wilderness area of the park except for bear research and management or law enforcement reasons. When proper food storage and other safety guidelines are followed in Denali, guns are unnecessary. If situations develop where guns seem necessary an effort should be made to contact wildlife management personnel first.

Unfenced field camps in the backcountry should not be left unattended for extended periods. Even when human food is not stored there, tents and other equipment can attract curious bears, and damage could occur.

Fenced camps must have gates closed and secured when they are unattended. Reasonable measures must be taken to keep fences as bear proof as possible. Bears may attempt to go under as well as over a fence. Any problems with fenced camps should be reported.

Cabins used as housing should be secured against bears when unattended and food and garbage smells should be kept to a minimum. Gray water should be dispersed away from cabins so that odors are not concentrated just outside the cabin door. Bears commonly use the areas around park cabins and may be active day or night.

All interactions with bears in the field should be reported on a Bear Information Management System (BIMS) form. Interactions are instances when a bear is aware of your presence and reacts either passively (ignoring you) or actively (running, approaching, etc.) Any case of bears getting human food, causing property damage, or injury should be reported immediately. Report bear problems to the Wildlife Management Technicians, a ranger, or the park dispatch office.

I understand these safety guidelines and have been given bear encounter information.

Signed _____ Date _____

Keep Wildlife Wild Brochure



Michael Leaman/Photo Disc



KEEP WILDLIFE WILD
Never Feed or Approach Wildlife

This includes birds, squirrels, foxes and all other wild animals.

Feeding or approaching wildlife can cause problems for both humans and wildlife. Wild animals that have learned to associate humans with food rewards often become dependent on human-related food and garbage. They lose their wildness and may become threats to people, property, and themselves.



BPP Photo

For more information contact
 Denali National Park and Preserve
 PO Box 9
 Denali Park AK 99755
 907-683-2294



Keep Wildlife Wild



Never Feed or Approach Wildlife





Denali National Park and Preserve

What Can Happen
 Feeding and approaching wild animals changes their behavior, often with catastrophic results. Animals are often injured or killed when they spend more time around vehicles at roads and parking areas. They are also easier for predators to catch in these open areas.

Feeding causes wild animals to lose their natural fear of humans
 Wildlife can become an easy target, or the bold advances of an animal may be misinterpreted as an "attack" on a person.



BPP Photo

You risk injury when you do not keep a respectful distance from wild animals
 Wildlife can misinterpret your actions. They don't know where the food stops and your fingers begin. Once again, animals lose when people complain of being bitten or "attacked".

Many animals have specialized diets and the wrong foods can negatively affect their health
 Artificial food sources can also cause increased wildlife populations that natural food supplies can't support.



BPP Photo

Wild animals often cause property damage when they are fed human food
 Animals will chew or bite into packs, coolers and even enter vehicles and buildings when they have learned that people have food. Foxes, squirrels, and bears have entered or damaged tents to get at food stored improperly.



BPP Photo

Help Prevent Problems

- Never feed or approach wild birds or other animals.
- Properly store food and dispose of garbage in bear-proof garbage cans.
- Never leave food unattended, even for a short while.
- Pick up food scraps and wipe down tabletops after eating.
- Never overfill garbage cans. Take your trash to a can that is less full.
- Encourage others to follow these instructions.



KEEP WILDLIFE WILD
Never Feed or Approach Wildlife

Campground Bulletin Boards Bear Safety Information

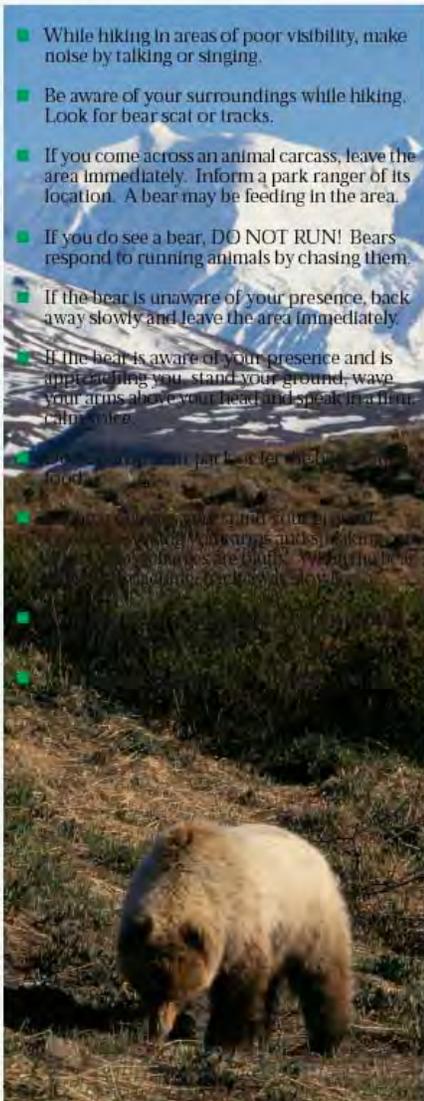
Regulations You Need to Know

Food Storage for Bear Safety

All food, including cans and bottles, ice chests, garbage and equipment used to cook or store food, must be properly secured from the park's wildlife. Unless you are actively preparing a meal, properly store these items by placing them in a hard-sided vehicle or in the food storage lockers provided. Scented items (such as toothpaste and lotion) should also be treated as food.

Bear Encounter Tips

- While hiking in areas of poor visibility, make noise by talking or singing.
- Be aware of your surroundings while hiking. Look for bear scat or tracks.
- If you come across an animal carcass, leave the area immediately. Inform a park ranger of its location. A bear may be feeding in the area.
- If you do see a bear, DO NOT RUN! Bears respond to running animals by chasing them.
- If the bear is unaware of your presence, back away slowly and leave the area immediately.
- If the bear is aware of your presence and is approaching you, stand your ground, wave your arms above your head and speak in a firm, calm voice.
- Do not approach a bear for a picture or to feed it.
- Do not feed a bear, even if you think you are feeding it. Feeding a bear is illegal and can result in a fine or jail time. Feeding a bear also makes it more likely that the bear will become habituated to humans and its dependence on humans will increase. Feeding a bear also makes it more likely that the bear will become aggressive and attack you.



Camping in Bear Country

Denali is home to both the grizzly and the black bear and they will enter this campground on occasion. However, you may decrease the likelihood of bear encounters by following these suggestions:

- Do not approach bears or other wild animals; they are dangerous.
- Packs and sleeping bags should be kept free from food odors. As a precaution against food odors, wash your hands and face before retiring. If possible, do not sleep in the clothes you wore when cooking.
- Keep a clean camp. Wash the picnic table and grill after use. Put garbage in trash containers. Do not leave food scraps around or in your camp.
- Regulations require that all food, cooking utensils and ice chests be kept in a closed vehicle or stored in the food lockers provided. Treat scented items (such as toothpaste and lotion) as food. Do not eat or store food in your tent.

If you see a bear in the campground, have property damaged by a bear or are injured by a bear please contact a ranger or the campground host as soon as possible.



KEEP WILDLIFE WILD

Never Feed or Approach Wildlife

Alpenglow Bear Safety Article - 2003

Close Encounters of a Bear Kind

AVOIDING ENCOUNTERS

Denali National Park and Preserve is home to both black bears and grizzly bears. Black bears inhabit the forested areas of the park, while grizzly bears mainly live on the open tundra. Almost all bears seen by visitors along the Park Road are grizzlies. The bears of Denali are wild creatures, free to behave as they wish. If annoyed, these solitary animals can be very dangerous to intruders. For your own protection, and to keep Denali bears healthy and wild, please carefully read and abide by these rules.

As visitors to this wildlife sanctuary, each of us has an obligation to respect bears and their habitat. These rules are strictly enforced in Denali. Failure to observe them may result in citations and fines.

- **BE ALERT:** Bears are active both day and night and can be anywhere. Watch for tracks and scat.
- **DON'T SURPRISE:** Bears may perceive you as a threat if you startle them.
- **MAKE NOISE:** Warn bears of your presence by making noise—sing, shout, talk. Be especially careful in dense brush where visibility is low, and along rivers where bears cannot hear you over the noise of the water.
- **NEVER APPROACH:** Bears should live as free from human interference as possible. Give them space. It is illegal to approach within 1/4 mile.

Please report all bear incidents and encounters to a ranger. Park rangers and biologists need this information to document bear behavior for research and management purposes.

For more information on human-bear encounters, read *Backcountry Bear Basics* by Dave Smith; or pick up a detailed handout from the Visitor Center.

Allowing a bear to obtain human food or garbage, even once, may cause it to seek out more human food. Eventually, if the bear becomes a threat to human safety, it will be killed. For this reason, it is against the law to feed bears in Denali, either purposely or by carelessly leaving food or garbage where bears can get it.



Photo ©Karen Ward

IF YOU ENCOUNTER A BEAR

- ❖ **DO NOT RUN!** Running may elicit a chase response. Bears can run faster than 30 mph (50 km/hr). You cannot outrun them. If the bear is unaware of you, detour quickly and quietly away. Give the bear plenty of room, allowing it to continue its activities undisturbed.
- ❖ **BACK AWAY SLOWLY IF THE BEAR IS AWARE OF YOU!** Speak in a low, calm voice while waving your arms slowly above your head. Bears that stand up on their hind legs are not threatening you, but merely trying to identify you.
- ❖ **SHOULD A BEAR APPROACH OR CHARGE YOU—DO NOT RUN, DO NOT DROP YOUR PACK!**



Photo © Okunian Ward

Bears sometimes charge, coming within ten feet of a person before stopping or veering off. Dropping a pack may encourage the bear to approach people for food. **STAND STILL** until the bear moves away, then slowly back off.

- ❖ **IF A GRIZZLY MAKES CONTACT WITH YOU, PLAY DEAD.** Curl up into a ball with your knees tucked into your stomach, and your hands laced around the back of your neck. Leave your pack on to protect your back. If the attack is prolonged, fight back vigorously.
- ❖ **IF A BLACK BEAR MAKES CONTACT WITH YOU, FIGHT BACK.**

Campgrounds

- ❖ All food, food containers, coolers and dirty cooking utensils must be stored in a closed, hard-sided vehicle or in campground food-storage lockers whenever they are not in use. This includes freeze-dried and canned foods, as well as beverages and odorous items, such as soap, toothpaste and sunscreen.
- ❖ Keep a clean camp. Trash and garbage must be stored in the same manner as food, or in a bear-resistant food container (BRFC) located in the campground. Scrape unwanted food from pots and plates into a BRFC.
- ❖ Never leave food, containers, or garbage unattended even for just a few minutes.



Photo © Thomas D. Marsjulen

Backcountry

In most of Denali's backcountry units, all food and garbage must be stored in BRFCs. Issued at the Backcountry Desk with your backcountry permit, these containers are lightweight, cylindrical canisters specifically designed to keep bears from obtaining food and garbage. Since the introduction of mandatory BRFC use in 1984, there has been a 95% reduction in bears obtaining backpackers' food and an 88% decrease in property damage.

- ❖ All food, including freeze-dried and canned foods, beverages, and odorous items, such as soap and sunscreen, must be kept in the BRFC when not in use.
- ❖ Cook and store food at least 300 feet downwind from your tent in an area with good visibility in all directions. Keep an eye out for approaching bears. Be prepared to put food away in a hurry.
- ❖ Avoid cooking greasy or odorous foods. Do not sleep in the same clothes you wore while cooking.
- ❖ Keep a clean camp. Pack out all garbage.

Pepper Spray

The use of pepper spray as a bear deterrent is a personal choice. If you decide to carry it, be aware that wind, spray distance, rain and product shelf life all influence its effectiveness. Pepper spray canisters must be secured in packs with safety pins in place to prevent accidental discharge while traveling on buses.

Appendix Q: Backcountry Use Guidelines



Denali National Park and Preserve Backcountry Camping Guide



Michael Lavoni Photo

Getting Started

This brochure contains information vital to the success of your backcountry trip in Denali National Park and Preserve. The following paragraphs will outline the Denali backcountry permit system, the steps required to obtain your permit, and some important tips for a safe and memorable wilderness experience.

Denali's Trailless Wilderness

Traveling and camping in this expansive terrain is special. The lack of developed trails, bridges, or campsites means that you are free to determine your own route and discover Denali for yourself. However, with this freedom comes responsibility – responsibility for yourself and for the wilderness. Self-reliance is paramount. You must be prepared to travel crosscountry through remote terrain in harsh weather, and rescue yourself in the event of problems. It is also your responsibility to help protect the special resources and opportunities that are present at Denali by carefully following the principles of Leave No Trace so that your travels do not diminish the experience of those who follow you.

Backcountry Unit System

The 6 million acres of Denali National Park and Preserve is divided into 87 separate backcountry units (see map on reverse side). Forty-one units within the Denali Wilderness have a limit on the number of individual people that can camp in each unit per night. During peak summer visitation many of these units are heavily used, so please come to the Backcountry Desk with several alternative trip itineraries. Don't become discouraged if your first choice is not available. Remember, there are 6 million acres to choose from, and all of the units offer excellent wilderness trips!

Pay attention to the following requirements when planning a trek through Denali's backcountry:

- Forty-one backcountry units within the Denali Wilderness have a specific quota.
- Unit availability determines where you may camp each night and you must camp in the unit for which you have a permit.
- Maximum 7 consecutive nights in a single unit.
- Maximum 30 nights in the backcountry (various units).
- Permits are issued only in person (no telephone reservations), and no more than 24 hours in advance of the first day of your trip.
- All party members must be present to receive a permit.
- Permits are not required for day hiking in the backcountry.

Wildlife of Denali



Kevin Ward Photo

Bears

Synthetic of the Alaska wilderness, both grizzly bears and black bears inhabit the park and may be encountered in the backcountry. To keep these magnificent creatures wild and enhance your personal safety, keep the following in mind:

- Make noise while hiking to alert bears of your presence.
- Use Bear Resistant Food Containers and store them 100 yards (meters) from cooking areas and tent sites.
- Be alert for bears and alter your activities to avoid them.
- Never run from a bear.
- Pepper spray can be carried as an added precaution. However, it is useful only as a last resort in the event of an emergency, and should not be viewed as substitute for proper backcountry behavior.

When you visit the Backcountry Desk, you will be provided with more detailed information about hiking in bear country.

Wildlife

Denali is home to sheep, caribou, wolves, foxes, bears, moose, eagles, ptarmigan, and other wildlife that you are very likely to encounter in the Backcountry. Please keep Denali's animals wild by following these guidelines when encountering wildlife:

- Do not feed or allow wildlife to obtain human foods.
- Maintain a **minimum 114-mile (7 km) distance from bears.**
- Do not approach or follow wildlife. Maintain a **minimum 75 foot (23 meter) distance from all other animals.**
- If your presence alters an animal's behavior, you are too close.

Bear Resistant Food Container (BRFC)

These hard plastic portable containers are a vital part of Denali's bear-human conflict management program. You must store all food, garbage, and scented items in a BRFC when camping overnight in units where they are required. Their consistent use has resulted in a bear population that does not associate humans or their property with food sources. A small BRFC weighs 3 lbs. and holds 3-5 days of food for one person, and the larger BRFC weighs 5 lbs. and carries 7-10 days of food. BRFCs are issued free of charge with backcountry permits and must be returned within 48 hours following a trip. If the BRFC is lost or damaged, you may be held responsible for its replacement. Kevlar or bear-resistant bags are not permitted.

Critical Wildlife Closures

There are both permanent and temporary wildlife closures every year in Denali. These areas limit all entry and exist for the mutual protection of humans and critical wildlife species. It is your responsibility to recognize and respect the boundaries of these closures. Ask a ranger at the Backcountry Desk for recent closure information. Failure to avoid closures may result in a citation.

Getting a Permit

Permits are available at the Backcountry Desk located in the Visitor Access Center (VAC) at the Riley Creek Entrance Area.

Step 1: Plan Your Itinerary

Visit www.nps.gov/denali/home/hiking to preplan several alternative itineraries prior to your arrival in the park. Building flexibility in your plans is very important because certain units may be unavailable at the time you actually wish to obtain your permit. Remember to be conservative when predicting your daily mileage. There are no trails, and travel can be slow and difficult in brushy areas or when crossing glaciers rivers. Upon your arrival at the Backcountry Desk at the VAC, several additional resources, such as unit description guides, local maps, and knowledgeable staff, will be available to assist you in planning your trip.

Step 2: Watch Backcountry Video

This informative 30-minute video program is presented at the VAC and will answer many questions you will have about negotiating the Denali backcountry. It covers topics such as campsite selection, bear and wildlife encounters, river crossings, Leave No Trace principles, Bear Resistant Food Containers (BRFCs), and much more. All members of your party must view this program.

Step 3: Attend Safety Talk

Following the video, all party members must be present for a brief safety talk to receive the backcountry permit and the Bear Resistant Food Containers (BRFC) that is required for proper food storage. You must sign your permit in recognition that you understand all backcountry rules and regulations. Violations of the conditions of the permit may result in adverse impacts to park resources and legal consequences.

Terrain of Denali

There are five major terrain categories in the Denali backcountry. Here's what you can expect:

- **Gravel River Bars:** these flat, rocky surfaces characterize most major rivers in the park and provide good travel routes.
- **Wet Tundra:** this terrain is marshy and interspersed with hummocks. Travel can be slow and tricky.
- **Dry Tundra:** dry tundra generally exists at higher elevations and affords good, solid footing and limited brush.
- **Brushy Tundra:** typically occurs in bands or thickets between 2500-3500 feet, and often limits visibility and travel speed.
- **Glacial Moraine:** located at the base of glaciers and often denoted on maps by stippled areas, a moraine consists of ice covered with dirt and debris. Travel is rough and time-consuming.

Understandably, many of the most popular units are predominantly Dry Tundra terrain. However, permits for these units are also the most difficult to obtain, and sightings of other hikers are more common. We recommend you consider other less requested units that may require an initial extra effort to climb above the Brushy Tundra, but then typically also offer large areas of Dry Tundra, as well as exceptional opportunities for solitude.

River Crossings

There are no bridges across rivers in the backcountry. You must negotiate your own river crossings and park accordingly to keep dry in the event of an accidental swim. Water temperature is approximately 36° F (2° C), and a cold immersion may result in high risk of hypothermia. Try to cross where the river is braided and dispersed, rather than concentrated into a single deep, narrow channel. Due to the high silt content of the water, it is often difficult to ascertain the true depth of the river. River crossings can also vary widely during a trip depending on rainfall and temperatures. Glacial rivers generally run lower in early morning hours, so plan accordingly.

Other Information

Bicycle Camping

If you wish to travel the park road and hike from your bicycle, you must still camp at least 1/2-mile (1.3 km) from the road and not be visible from it. Bicycles must be stored at designated bike racks at established campgrounds, the Visitor Access Center, Toklat Road Camp, or Iliamna Visitor Center while you hike. Reservations are required if you wish to stay overnight in campgrounds along the park road. To make reservations, call 1-800-622-7275. Each Camper bus can accommodate two bicycles.



Kevin Ward Photo

Caching

For extended backcountry treks, you may cache food and supplies in bear-proof food lockers located at any established campgrounds and the Visitor Access Center, Toklat Road Camp, or Iliamna Visitor Center. Label food/supplies with party name and date you intend to retrieve it. Denali National Park is not responsible for caches.

Mountaineering

If you intend to ascend Mt. McKinley or Mt. Foraker, contact the Talkeetna Ranger Station at 907-733-2231 or visit www.nps.gov/denali/home/mountaineering. Applications for permits must be received at least 60 days in advance of your expedition date. Registration is also recommended for other climbs.

Leave No Trace and Safety

There are no established campsites in the Denali backcountry. Use the following guidelines when selecting your campsite:

Camping

There are no established campsites in the Denali backcountry. Use the following guidelines when selecting your campsite:

- Your tent must be at least **1/2-mile (1.3 km) away from the park road and not visible from it.**
- **Camp on durable surfaces whenever possible** such as gravel river bars, and avoid damaging fragile tundra.
- In pristine areas like Denali, **avoid camping where others have camped.**
- **Do not move rocks or plants;** leave the area as you found it so that future hikers do not see signs of your use.



Kim Pearson Photo

Cooking

Fires are not permitted in the Denali Wilderness. Fuel for portable camp stoves is available for purchase at the Denali convenience store, located in the immediate vicinity of the VAC. When cooking, remain alert for bears; be ready to pack up and move quickly.

Drinking Water

Giardia and Cryptosporidia are bacteria found in unfiltered water and present serious health risks. Take one of the following precautions before drinking water from a natural source:

- Boil for 1 minute.
- Use a water filter.
- Treat with iodine tablets.

If you use a water filter, remember that many of Denali's rivers carry glacial silt. This silt will quickly clog your water filter and render it inoperable. The addition of silt-stopper devices is highly recommended for any water filter.

Sanitation

Neither pit nor chemical toilets are available in the backcountry. You must follow these rules for proper waste disposal:

- Dig a hole at least 6 inches deep (15 centimeters) and at least 100 feet (30 meters) away from water for fecal waste disposal.
- Pack out all sanitation products.

Minimum Impact Hiking

To keep the Denali backcountry in pristine condition for others, please take care in how you hike:

- **Hike on durable surfaces whenever possible,** such as gravel river bars.
- **Avoid hiking single file;** spread out and disperse to prevent the formation of social trails.

Gear Checklist

The following equipment is highly recommended when venturing out into the Denali backcountry:

- Hiking boots (waterproofed) and wool socks.
- Neoprene socks and gaiters for river crossings.
- Rain parka and pants (ponchos not recommended).
- Polypropylene, nylon, or wool clothing (avoid cotton). Be prepared for temperatures ranging from 30° to 80° F (-1° to 27° C) in the summer months.
- Stove, fuel, cookware and water bottles.
- Water filter (preferably equipped with silt stopper device).
- Compass and map (maps available at Visitor Access Center).
- Toilet paper and trowel.
- Tent with rain fly and waterproof floor (divouacking is not recommended).
- Sleeping bag and pad (for any overnight summer trip, protection to 20° F (-7° C) is suggested).
- Insect repellent and/or head net.
- Emergency gear, such as first aid kit, knife, and a signaling device such as a whistle, signal mirror, or flare.
- Large plastic or waterproof bags to protect the gear inside your pack.



For more information contact:

Backcountry Operations
 Denali National Park and Preserve
 PO Box 9
 Denali Park, AK 99755

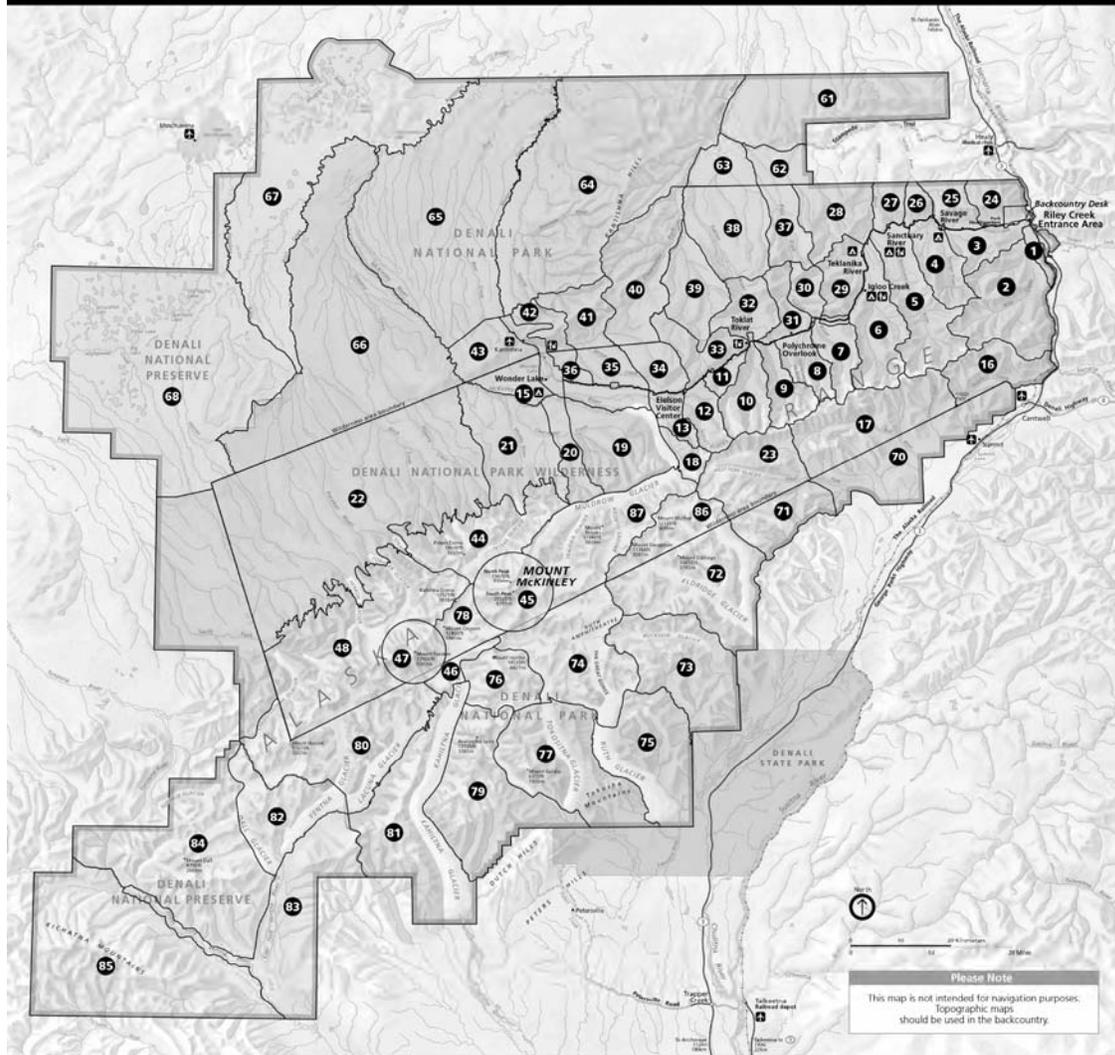
Phone: May - Sept. 907-683-9610
 Oct. - April 907-683-2294
 Fax: 907-683-9617
 Email: denali_info@nps.gov

Backcountry Internet Site:
www.nps.gov/denali/home/hiking/index.html



Bob Butler/Field Photo

Backcountry Units



| No. | Name | BRFC | Quota | Acreage |
|-----|---------------------------|------|-------|---------|
| 1 | Triple Lakes | Req | 12 | 6,567 |
| 2 | Riley Creek | Req | 12 | 79,533 |
| 3 | Jenny Creek | Req | 4 | 22,740 |
| 4 | Upper Savage | Req | 6 | 32,578 |
| 5 | Upper Sanctuary | Req | 6 | 67,066 |
| 6 | Upper Teklanika | Req | 6 | 54,011 |
| 7 | Upper East Fork | Req | 4 | 24,255 |
| 8 | Polychrome Glaciers | Req | 6 | 23,379 |
| 9 | East Branch Upper Toklat | Req | 6 | 26,250 |
| 10 | West Branch Upper Toklat | Req | 6 | 31,432 |
| 11 | Stony Dome | Req | 2 | 8,693 |
| 12 | Sunset / Sunrise Glaciers | Req | 4 | 21,077 |
| 13 | Mount Eielson | Req | 4 | 14,851 |
| 14 | McKinley Bar East | Req | 4 | 17,432 |
| 15 | McKinley Bar West | Req | 4 | 21,094 |
| 16 | Windy Creek | Req | 8 | 39,076 |
| 17 | Foggy and Easy Pass | Req | 8 | 88,405 |
| 18 | Upper Glacier Creek | Req | 4 | 12,471 |
| 19 | Pirate Creek | Req | 4 | 69,236 |
| 20 | McGonagall Pass | Req | 4 | 25,079 |
| 21 | Muddy River | Req | 8 | 81,830 |
| 22 | Upper Foraker | Req | — | 371,494 |
| 23 | West Fork Glacier | Req | — | 64,848 |
| 24 | Mount Healy | Req | 4 | 20,424 |
| 25 | Healy Ridge | Req | 4 | 20,403 |
| 26 | Primrose Ridge | Req | 4 | 9,679 |

| No. | Name | BRFC | Quota | Acreage |
|-----|---------------------|------|-------|---------|
| 27 | Mount Wright | Req | 4 | 14,412 |
| 28 | Sushana River | Req | 8 | 45,457 |
| 29 | Igloo Mountain | Req | 4 | 27,763 |
| 30 | Tributary Creek | Req | 4 | 14,960 |
| 31 | Polychrome Mountain | Req | 6 | 18,788 |
| 32 | Middle Toklat | Req | 4 | 29,421 |
| 33 | Stony Hill | Req | 4 | 30,119 |
| 34 | Mount Galen | Req | 4 | 22,769 |
| 35 | Moose Creek | Req | 4 | 19,732 |
| 36 | Jumbo Creek | Req | 2 | 8,195 |
| 37 | Lower East Fork | Req | 6 | 29,421 |
| 38 | Lower Toklat | Req | 6 | 68,476 |
| 39 | Stony Creek | Req | 4 | 45,130 |
| 40 | Clearwater Fork | Req | 12 | 82,532 |
| 41 | Spruce Peak | Req | 12 | 32,317 |
| 42 | Eureka Creek | Req | 12 | 16,127 |
| 43 | Isidoros Creek | Req | 12 | 32,542 |
| 44 | Peters Glacier | Req | — | 75,233 |
| 45 | Mount McKinley | Req | — | 50,011 |
| 46 | Upper Kahlna | Req | — | 24,480 |
| 47 | Mount Foraker | Req | — | 32,008 |
| 48 | Heron Glacier | Req | — | 177,513 |
| 61 | Stampede | Req | — | 121,934 |
| 62 | Southeast Stampede | Req | — | 21,864 |
| 63 | Southwest Stampede | Req | — | 25,367 |
| 64 | Karstobna Hills | Req | — | 322,355 |

| No. | Name | BRFC | Quota | Acreage |
|-----|--------------------------|------|-------|---------|
| 65 | Moose-McKinley | Req | — | 312,189 |
| 66 | McKinley-Birch | Req | — | 311,395 |
| 67 | Birch-Foraker Preserve | Req | — | 282,635 |
| 68 | Heron-Highpower Preserve | Req | — | 410,396 |
| 69 | Swift Fork | Req | — | 155,143 |
| 70 | Bull River | Req | — | 84,464 |
| 71 | Ohio Creek | Req | — | 39,887 |
| 72 | Eldridge Glacier | Req | — | 177,309 |
| 73 | Bucklin Glacier | Req | — | 99,896 |
| 74 | Upper Ruth | Req | — | 104,656 |
| 75 | Lower Ruth | Req | — | 96,070 |
| 76 | Mount Hunter | Req | — | 39,752 |
| 77 | Tokostna Glacier | Req | — | 144,861 |
| 78 | Middle Kahlna | Req | — | 11,905 |
| 79 | Little Switzerland | Req | — | 121,150 |
| 80 | Upper Yentna-Lacuna | Req | — | 124,748 |
| 81 | Lower Kahlna | Req | — | 144,403 |
| 82 | Dall-Yentna Preserve | Req | — | 69,480 |
| 83 | Yentna River Preserve | Req | — | 130,689 |
| 84 | Mount Dall Preserve | Req | — | 197,565 |
| 85 | Kinchatna Preserve | Req | — | 247,423 |
| 86 | Mount Mather | Req | — | 41,368 |
| 87 | Mount Brooks | Req | — | 97,065 |

BRFC = Bear Resistant Food Container Req = Required
 Rec = Recommended

Appendix R: Field Guidelines

These field guidelines are intended to provide general descriptions of management responses for the most common types of problems experienced at Denali. It must be understood that every interaction will pose its own unique set of considerations.

1. Repeated Observations of Bear(s) in One Location:

- Patrol ranger may check area for a carcass, berry patch, etc. which may warrant a temporary closure.
- Contact Chief Ranger and Wildlife Biologist if it appears closure may be needed. Contact the Communication Center if a closure is implemented (Appendix H).
- Remove closure when hazard is gone.
- Document observations (Appendix G).

2. Bear Observed in close proximity of Developed Area:

- Notify Wildlife Management Technicians and/or Law Enforcement Rangers.
- Inform other staff or visitor center staff if in area of VC.
- Inform visitors or residents in the area.
- Inform the Communication Center.
- Be especially alert for food and sanitation problems during routine patrols of nearby developed area.
- Monitor the area if the developed area is Eielson Visitor Center or if the animal seems to be traveling toward a developed area.
- Document observations

3. Bear in Developed Area:

- Notify Wildlife Management Technicians and/or Law Enforcement Rangers.
- Inform other staff or visitor center staff if in area of VC.
- Inform visitors or residents in the area.
- Inform the Communication Center.
- Monitor the bears' activities.
- Document initial report or observation.

A. Initial Contact with Bear:

- Attempt to mark the bear (i.e., paint ball) for future positive identification.
- Initiate hazing.
- Post "bear in area" signs in campground (Appendix B).
- The Sub-district Ranger will initiate extra patrols to contact visitors and eliminate unattended food and garbage.
- Interpretive Division will mention the situation during walks and talks.
- The Sub-district Ranger will request that VC give additional warning to campers receiving permits for that area.
- Continue to monitor the bear's activities and behavior patterns.
- Document all actions (Appendix G).

B. Second Contact; Same Bear and initial hazing has not worked:

- Initial Closure:
- Consider closure, especially for small campgrounds, to give the bear(s) a chance to move out of the area.
- Maintain closure for 5 days and patrol the area for the presence of the bear(s).
- If there is no bear(s) after 5 days, open the area.
- If the bear(s) is still frequenting the area, consider extending closure.
- Mark the bear (radio collar).
- Initiate aversive conditioning of the bear.
- If hazing or aversive conditioning fails, consider translocation.
- Document all actions.

4. People On Road within ¼ mile of a bear.

- Provide information about the current situation and bears in general
- Offer transportation out of area
- If the bear(s) is very close, monitor the situation, or remove the people from the area.
- If people are intentionally approaching the bear(s), consider written warnings or citations.
- Document all actions.

5. Private Vehicles Stopped, Observing Bear.

- Provide information about bears and safety around bears. Emphasize the problems that arise when bears obtain unnatural food and the effects of traffic on wildlife.
- If time permits, monitor the situation, especially in spring or fall when private vehicles are allowed to drive the road and DENA and shuttle bus traffic is light.
- Encourage people to move on after a reasonable time observing the bear.
- Rangers should try to stay with groups of photographers and enforce Code of Ethics for photographers with permits. Emphasize to visitors that not only human safety is of concern, but also the safety of the bear.
- Document all actions.

6. Dead Animal

- Notifications
- Inform other staff or visitor center staff if in area of VC.
- Inform visitors or residents in the area.
- Inform the Communication Center.
- Conduct an investigation.
- Notify visitor center staff and bus drivers so visitors entering the area can be informed.
- Document initial report or observation

A. No bear on carcass:

- 1) **If the carcass is in area where a closure won't be effective, such as within 300 meters of developed site, Visitor Center, Science and Learning Center, Riley Creek Campground, within 50 meters of Highway 3, or along Alaska Railroad:**
 - Attempt to move carcass to an area less frequented by people or where closures or patrols can control people.
 - The Wildlife Biologist, in consultation with the Chief Ranger, will decide on the relocation site. (e.g. the service road North of Sanctuary Campground, or the service road East of Teklanika bridge, service road beyond Toklat Road Camp).
 - Close relocation area if necessary (Appendix H).
 - Open when the carcass has been consumed.

- Document all actions.
- 2) **Within 100 meters of backcountry trail or within 800 meters of park road and on a constricted, regular travel route:**
 - Close the area at access points and around carcass (Appendix H).
 - Patrol the area to see if the carcass has been consumed.
 - Open when the carcass has been consumed.
 - Document all actions.
 - 3) **Further than 800 meters off road and not within 100 meters of trail or common route:**
 - The Backcountry Subdistrict Ranger will request that staff issuing backcountry permits or contacting day hikers inform these parties of the location of the carcass.
 - Discontinue this process once the carcass has been consumed.
 - Document all actions.

B. Bear on Carcass:

- 1) In frontcountry, along road, view points, access points for travel routes, within 300 meters of developed site, Visitor Center, Science and Learning Center, Riley Creek Campground, and Headquarters:
 - Notification.
 - Inform other staff or Visitor Center staff if in area of VC.
 - Inform visitors or residents in the area.
 - Inform the Communications Center.
 - Close the area.
 - Patrol regularly to ensure people are not in the area.
 - Open when the carcass has been consumed and the bear(s) is out of the area.
 - Document all actions.
- 2) In the backcountry
 - Inform backcountry desk staff
 - Close area especially if it is frequented by backcountry users

- Patrol the area and open when the carcass has been consumed
- Document all actions.

7. Single Interaction, No Injury and No Food Obtained.

- If necessary, escort people away from the bear without provoking further interactions.
- Conduct an initial investigation for the causes of the incident.
- Monitor the situation.
- Make appropriate notifications.
- Document all actions.

A. Interaction resulting from intentional or unintentional harassment:

- Provide information concerning bear behavior to individuals involved to prevent future negative interactions.
- Consider written warnings or citations.
- No management action directed toward the bear(s).
- Consider a temporary closure (one-week maximum).
- Document all actions.

B. Interaction resulting from a surprise encounters, curious approach, dominance interaction, predatory response, or close range tolerance:

- Provide information concerning bear behavior to individuals involved to prevent future negative interactions.
- No management action directed toward the bear(s).
- Consider a closure (one-week maximum).
- Document all actions.

C. Bear interest in anthropogenic food:

- Attempt to mark the bear (i.e. paint ball, radio collar) for future positive identification.
- Initiate hazing or aversive conditioning.
- If aversive conditioning fails, consider relocation.

D. Bear exhibiting threatening behavior:

- Attempt to mark the bear (i.e. paint ball, radio collar) for future positive identification.
- Test.
- Attempt relocation.
- If relocation fails or is not a reasonable option, consider placement in a zoo or research facility or destruction.
- Document all actions.

8. Bear exhibiting tolerant, conditioned or rewarded behavior. No injuries or food obtained.

- Conduct a thorough review of all interactions. Review the causes of the bear's behavior and determine if the problems in the area are related to one animal.
- If the Wildlife Management Technicians, Sub-district Ranger and Wildlife Biologist feel a bear represents an unusual threat to visitor safety, close area.
- Initiate patrol procedure.
- Document all actions.

A. If patrol procedure identifies bear attracted to human food or conditioned:

- Attempt to mark the bear (i.e. paint ball, radio collar) for future positive identification.
- Initiate hazing or aversive conditioning.
- If aversive conditioning fails, consider relocation.
- If relocation fails or is not a reasonable option, consider placement in a zoo or research facility.

B. If the bear demonstrates threatening behavior toward people:

- Consider destruction

C. If patrols do not find a bear demonstrating these behaviors, open the area after three patrols and/or two weeks.

9. Bear Obtains anthropogenic Food.

A. All Incidents:

- Conduct an initial investigation to determine the type of incident.
- Make appropriate notifications.
- Begin initial response procedures.
- Consider written warnings or citations.
- Provide information concerning bears to individuals involved.
- Consider how food and garbage handling practices may have contributed to the incident when selecting management options.
- Document all actions.

B. Backcountry:

- Close the area.
- Clear the area and locate the bear(s).
- Attempt to mark the bear (radio collar, paint ball) for future positive identification.
- Initiate aversive conditioning.
- If the patrol is unsuccessful in finding the bear(s), open the area after five days.
- Document all actions.

C. Frontcountry:

- Correct any food or garbage handling problems.
- Identify the bear(s).
- Attempt to mark the bear (radio collar, paint ball) for future positive identification.
- If bear returns, initiate hazing or aversive conditioning.
- If aversive conditioning fails, consider translocation.
- If two translocations fail, consider placement in a zoo or research facility, or destruction.
- If the patrol is unsuccessful in finding the bear(s), open the area after five days.

Document all actions.