

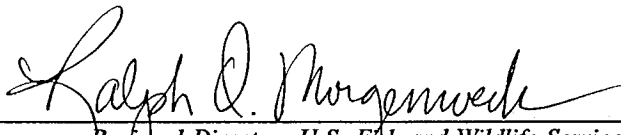
Grizzly Bear Recovery Plan

Supplement: Bitterroot Ecosystem Recovery Plan Chapter

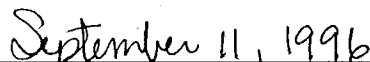
(Original Recovery Plan Approved: January 29, 1982)

Prepared by: Dr. Christopher Servheen
Grizzly Bear Recovery Coordinator
U.S. Fish and Wildlife Service
Forestry Sciences Laboratory
University of Montana
Missoula, MT 59801

Approved:



Regional Director, U.S. Fish and Wildlife Service



Date

BITTERROOT ECOSYSTEM GRIZZLY BEAR RECOVERY PLAN CHAPTER

TO BE APPENDED TO GRIZZLY BEAR RECOVERY
PLAN REVISED SEPTEMBER 10, 1993

BACKGROUND ON THE BITTERROOT ECOSYSTEM

The Bitterroot Ecosystem (BE) is one of the largest contiguous blocks of Federal land remaining in the lower 48 United States. The core of the BE contains the Selway-Bitterroot Wilderness and Frank Church-River of No Return Wilderness. Together these two wilderness areas make up the largest block of wilderness habitat in the Rocky Mountains. The BE also contains significant areas of multiple use lands where wildlife and fisheries values coexist with resource use and recreation. The BE formerly contained grizzly bears, but they are gone today due to excessive human-caused mortality. The demise of the grizzly from the BE was due to the actions of humans. Bears were actively killed for their fur, for sport, and to eliminate possible threats to humans and domestic livestock. The killing of bears for livestock protection reached its highest level in the early 1900's when domestic sheep grazing in what is now the Selway-Bitterroot Wilderness and Frank Church-River of No Return Wilderness reached its peak. The last bears were killed in the north end of the BE. Bud Moore, who was born in the Bitterroot Valley and was a former District Ranger for the Powell Ranger District of the Clearwater National Forest, has written an account of the last grizzlies of the BE (Moore, in press). He interviewed more than 25 old outfitters, hunters, trappers, and users of the ecosystem for his book. The last verified grizzly bears were seen in the 1940's. Since that time, there have been no verified sightings, verified tracks, accidental kills of grizzlies by black bear hunters, trapping of grizzlies by the Idaho Department of Fish and Game as part of their black bear research, sightings of grizzlies on annual aircraft wildlife surveys, or verified photos of grizzlies at baited cameras placed by management agencies.

The last verified death of a grizzly bear in the BE occurred in 1932 and the last tracks observed by Moore were in 1946 (Moore 1984). Although occasional unverified reports of grizzly sightings persist in the BE (Melquist 1985), no verified tracks or sightings have been documented in more than 50 years since the 1940's. A limited 2-year remote-sensitive camera study in the Clearwater region did not detect the presence of grizzly bears (Servheen et al. 1990, Kunkel et al. 1991). This lack of any verified evidence for more than 50 years is evidence that there are no grizzly bears in the BE today. Based upon the best scientific evidence available, there are no grizzly bears in the BE at this time.

RECOVERY OF GRIZZLY BEARS IN THE BITTERROOT

The BE is unique among the six established grizzly bear recovery areas in the United States in that there are no grizzly bears. Recovery of grizzly bears in the BE through natural recolonization is considered a remote possibility because of the lack of movement or dispersal by grizzly bears in the northern Rocky Mountains. Therefore, grizzly bear recovery will require reintroduction of bears from other areas.

A variety of reintroduction alternatives could be feasible. These include reintroduction under its current classification done as a fully threatened species; reintroduction as experimental, nonessential under section 10(j); and reintroduction under experimental essential status under section 10(j). Experimental, essential status would be legally the same as being listed as a threatened species. Section 10(j) allows the Fish and Wildlife Service to reintroduce animals into former range that is currently unoccupied and to develop special management rules for the reintroduced bears by publication in the Federal Register. These special management rules can be crafted to the specific situation of the reintroduction area and they can be written to allow additional management flexibility. This management flexibility can add to acceptance of the reintroduction by accommodating local conditions and needs and thereby increase the possibility of success of the effort. A possible application of this increased management flexibility under section 10(j) status would be the use of a citizen management committee which would allow local interests to participate in the management of the experimental population. No section 7(a)(2) reviews of Federal actions are necessary within the reintroduction area under experimental nonessential status, except for actions on National Wildlife Refuges and National Parks within the reintroduction area (no National Wildlife Refuges or National Parks exist within the BE). All bears reintroduced under experimental, nonessential status would be protected under the Endangered Species Act from illegal take, but the take requirements are only those specified in the Special Rule for that experimental population. A Federal Register publication of a Final Special Rule would establish, for a nonessential experimental population of bears, their experimental, nonessential status, define the experimental area within which this status will apply, and establish any special management provisions such as sanitation on public lands, public education efforts, or habitat management that will apply within the experimental area.

To comply with the National Environmental Policy Act (NEPA), an appropriate NEPA document must be prepared on any proposed Special Rule published in the Federal Register. An environmental impact statement (EIS) will examine the social, economic, and environmental consequences of a full range of grizzly

bear recovery alternatives for the BE, including no action. Alternatives should include no reintroduction, release of bears classified as essential, and release of some grizzly bears as an experimental, nonessential population under section 10(j) authority. Considerations of an area for recovery would be centered upon a core area identified in the evaluation process, with adjacent lands considered, as necessary, to achieve the objectives of grizzly bear recovery. Any proposed Special Rule will be published in the Federal Register simultaneously with the release of the draft EIS. Comments on both the Proposed Rule and the draft EIS will be solicited. After comments have been received and considered, any Final Rule and final EIS would then be followed by a signed Record of Decision which will determine what action, if any, to implement.

This chapter contains tasks that address the five factors in section 4(a)(1) pertaining to the listing or delisting of any species under the Endangered Species Act. These factors must be addressed in any rule published in the Federal Register to list or delist a species. The details of which tasks address which factors are presented in Table 1.

RECOMMENDATIONS FOR MANAGEMENT ACTION DURING THE FIRST 5-YEAR PERIOD OF RECOVERY ARE AS FOLLOWS: (references to chapter sections are identified in parentheses)

1. Publish a Proposed Rule in the Federal Register to designate grizzly bears reintroduced into the BE as a nonessential experimental population to achieve recovery. Evaluate the impacts of the Proposed Rule by preparing an EIS which will analyze the impacts of the Proposed Rule and alternative courses of action, including no action. The Proposed Rule and draft EIS will be published simultaneously. Solicit public comments on both the Proposed Rule and the draft EIS for at least 60 days. Finalize documents based on public comment and publish Final Rule or a Withdrawal Notice in the Federal Register detailing the action and release final EIS to be followed by a signed record of decision.
2. Initiate a public information program designed to inform the public on grizzly bear recovery efforts. (B6)
3. Develop during the NEPA process a schedule for implementation of appropriate management measures. (B133, B21144, B221--B225, B23)
4. Continue to evaluate reported sightings of grizzly bears in the BE. (B12, B33, B34, B41)

5. At the end of the first 5-year period, revise as necessary the subgoals and review a plan of action for the second 5-year period.

FUTURE TASKS FOR ACHIEVING AND MAINTAINING RECOVERY ONCE THE METHOD FOR RECOVERY OF GRIZZLY BEARS IN THE BE HAS BEEN DETERMINED THROUGH THE RULE MAKING AND EIS PROCESSES:

Subgoal: For the BE, 14 females with cubs over a running 6-year average, subject to revision as more information becomes available; delineation and occupancy of Bear Management Units (BMU's) will be determined at a future date; the subgoal for known, annual human-caused mortality remains zero until at least 90 grizzly bears are established. At that time, known, human-caused mortality is not to exceed 4 percent of the minimum estimate based on the most recent census of females with cubs; furthermore, no more than 30 percent of this mortality limit shall be females.

- B1. Establish Objective for Recovery and Identify Limiting Factors According to the Rules and Procedures Established for Grizzly Bears in the BE. The long-term subgoals stated above for grizzly bear recovery are tentative and may be altered as more information becomes available. Subgoals were established to ensure that sufficient numbers of grizzly bears exist throughout the BE to allow for a self-sustaining number of bears. The subgoals are based on the three key items monitored (females with cubs, occupancy of BMU's, and known, human-caused mortality), and indicate the status of the grizzly bears in the BE.

At this time, approximately 280 grizzly bears is the tentative long-term recovery objective for the BE (see item No. 3 below). This number would not be reached for perhaps 40-50 years. This number is based on the size of the evaluation area, the relative quantity and quality of grizzly bear habitat, and the reported densities of grizzly bears in studies of similar habitats in British Columbia and the United States. The evaluation area is about 14,200 square kilometers (km²) in size (5,500 square miles (mi²)) (Figure 1), so a recovered number of bears would equate to about one bear per 50 km² within this area (one bear per 20 mi²).

There is no information on historical grizzly bear habitat use or historical density in the BE. Therefore, the subgoals detailed in this chapter are based on reasonable extrapolations of knowledge gained through grizzly bear research conducted in other areas and should be revised as additional information becomes available. Provisional recovery subgoals for the BE were developed using the following assumptions and methods:

1. Recovery of grizzly bears in the BE depends upon verification of meeting the criteria for a recovery. A recovered number of grizzly bears is defined as one that:
 - (a) Can sustain the existing and anticipated level of known and unknown, unreported, human-caused mortality that exists within the BE, and,
 - (b) Is well distributed throughout the recovery area in the BE
2. There is a relationship between the sustainable human-caused mortality level and the number of unduplicated females with cubs. Therefore, the number of females with cubs can be useful in establishing acceptable levels of mortality.
3. As grizzly bears in the BE recover, it is expected that the grizzly density could reach at least one bear per 50 km² (one bear per 20 mi²). This estimate is based on an average of density estimates from grizzly research in British Columbia, the Northern Continental Divide Ecosystem (NCDE), and the Yellowstone Grizzly Bear Ecosystem. Habitat within the BE varies in quality from highly productive sites to poor quality habitat. Density potentials are based on habitats in other ecosystems with habitats similar to those in the BE. Based on habitat information provided in the Bitterroot Evaluation Area study (Davis and Butterfield 1991), habitat within the BE has been divided into three equal parts. Division criteria are moisture and subsequent vegetation types, road densities, and availability of spring range. Grizzly bear density for the best habitat was estimated to approach one bear per 29 km² (one bear per 11 mi²), one bear per 58 km² (one bear per 22 mi²) for moderate habitat, and one bear per 138 km² (one bear per 53 mi²) for poor habitat. Based on 4,677 km² (1,805 mi²) in each of the divisions, the minimum number of bears the BE could support is 163 in the high density area, 81 in the moderate, and 34 in the low. This suggests that the BE could sustain an average of at least 278 grizzly bears, or approximately one bear per 50 km² (one bear per 20 mi²).
4. As the BE grizzly bears approach recovery, human-caused grizzly mortalities will occur at some long-term rate due to inevitable interactions between bears and people throughout the BE. Grizzly bear mortality will probably increase as numbers of bears increase and bear-human interactions increase.

5. The reporting efficiency for female grizzlies is 60 percent in selected areas of the NCDE in Montana (Aune and Kasworm 1989). Until better data are available, a 60 percent reporting efficiency will be used in estimates of the number of grizzly bears in the BE. Thus, of all females with cubs in the BE in a given year, it is assumed that on average 60 percent will be detected/seen and reported. This is a conservative estimate of females with cubs. Because of the unroaded and densely forested nature of much of the BE, the reporting efficiency is most likely lower than 60 percent, but this figure is used to err toward a minimal estimate. The calculated minimum number of females with cubs based on a 60 percent reporting efficiency will underestimate the actual number. As more information is obtained in the BE, specific goals based on better data will be developed.
6. On average, 33 percent of adult females (at least 5 years old) will be with cubs each year. This is based on an average 3-year reproductive interval for adult females. Thus, the annual average number of females with cubs can be multiplied by 3 to estimate the minimum number of adult females in the area.
7. As is common in other grizzly bear ecosystems, the numbers of grizzlies in the BE is expected to be 50 percent adults and 50 percent subadults (Interagency Grizzly Bear Committee, 1987, pp. 47-59).
8. As common in other grizzly bear ecosystems, the sex ratio of both adults and subadults is expected to approximate 1:1 (Interagency Grizzly Bear Committee, 1987. pp. 47-59).
9. The maximum human-caused grizzly bear mortality level that can be sustained without decline with the above-assumed characteristics is 6 percent when no more than 30 percent of these mortalities are females (Harris 1984).
10. Unknown, unreported, human-caused mortality will occur each year at some level as the BE grizzly bear population approaches recovery.
11. A running 6-year average of unduplicated females with cubs is based on a 3-year reproductive cycle and will allow at least 2 years when each adult female alive can be reported with cubs. A running 6-year tally also will stabilize the average and make it less sensitive to annual changes in reporting efforts.

12. Using the facts and assumptions about the grizzly bears in the BE as stated above, and assuming that approximately 280 bears is a reasonable objective based on the size of the ecosystem and the quality of grizzly habitat within the recovery area, the subgoal for the minimum number of unduplicated females with cubs on a running 6-year average is 14 verified reports, both inside and within 10 miles of the recovery area boundary.

The subgoal of 14 females with cubs is sufficient to indicate a minimum of at least 276 bears (using method of Knight et al. 1988):

Fourteen females with cubs seen divided by 0.6 (sightability correction factor) = 23 total females with cubs; 23 X 3 = 69 adult females; 69 divided by 0.25 (the assumed proportion of adult females, see items No. 7 and No. 8 above) = a minimum of 276, or approximately 280, grizzly bears in the BE.

13. A minimum of 280, as indicated by recovery subgoals, could sustain a maximum human-caused mortality level of 6 percent per year without decline, or:

$$280 \times 0.06 = 17 \text{ human-caused bear mortalities}$$

14. The current human-caused mortality subgoal to facilitate recovery of the grizzlies in the BE is zero. In reality, this goal may not be realized because human-bear conflicts are likely to occur at some level within the BE. Management should strive to prevent all human-caused mortality in the BE.
15. The annual subgoal should remain zero known, human-caused mortalities. The female mortality subgoal should remain zero until the 3 key parameters indicate a minimum of at least 90 grizzly bears. Management should strive to prevent all human-caused mortality within and surrounding the BE. If control action is deemed absolutely necessary, the bears probably would not experience overall decline if human-caused mortality remains less than 4 percent. For instance, at least 86 grizzly bears could theoretically sustain a total of three mortalities or one female mortality annually ($86 \times 0.04 = 3$, and $3 \times 0.30 = 1$). Twenty-five grizzly bears could theoretically sustain only one male mortality annually ($25 \times 0.04 = 1$). However, these calculations do not account for demographic, genetic, or other problems that can be dramatically amplified in such small numbers of bears.

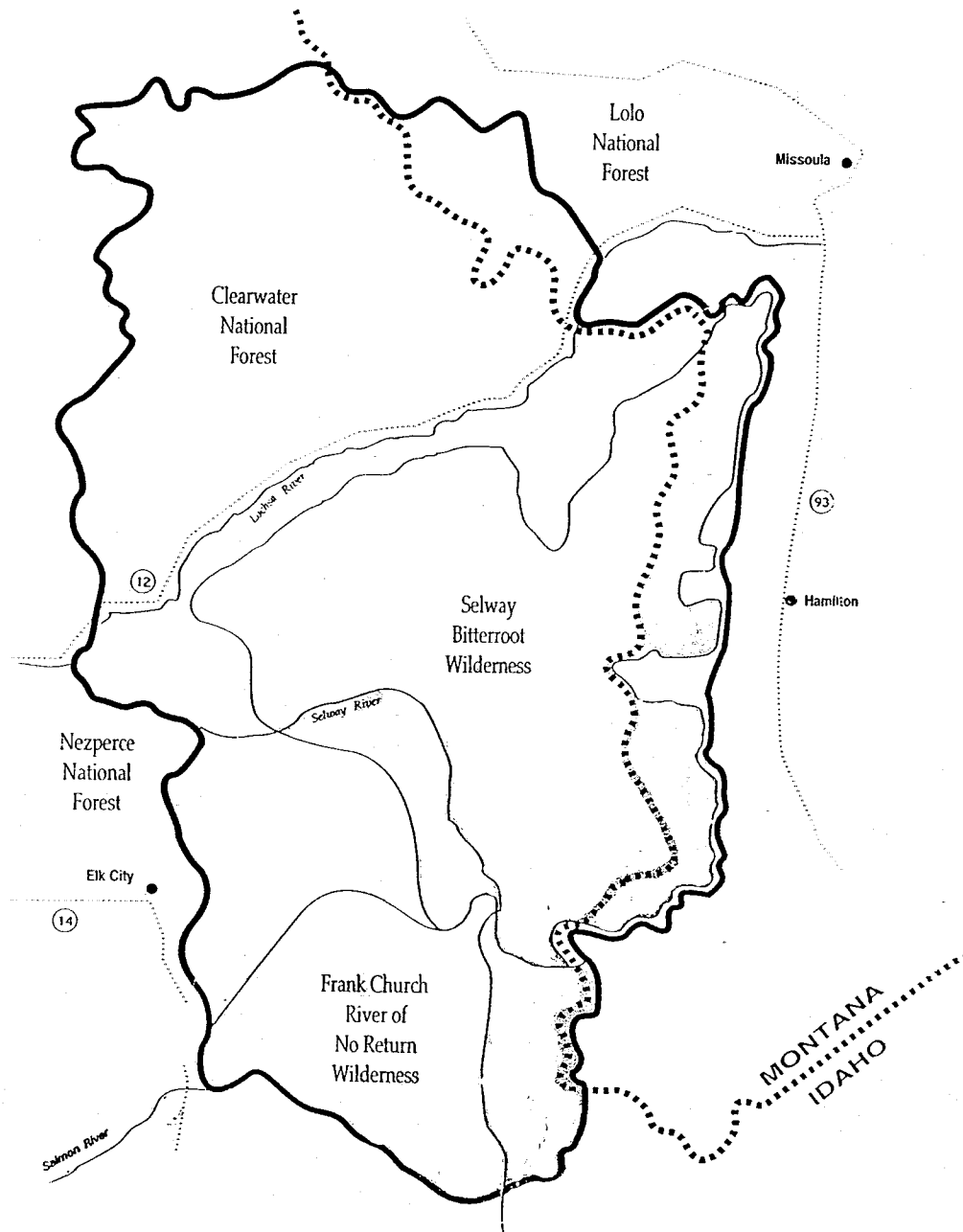


Figure 1. The Bitterroot grizzly bear evaluation area. This area was determined to be suitable grizzly bear habitat as a result of a 5-year habitat evaluation. This area is the core of grizzly bear habitat in the Bitterroot Ecosystem and will be the foundation for the future delineation of a recovery area.

In the future, to facilitate recovery of grizzly bears in the BE, and to allow for both error in minimum estimates of the number of bears and for unknown, unreported mortality, the maximum allowable human-caused mortality for the BE grizzly bears should be 4 percent of the minimum estimate, 30 percent of which may be females. In order to account for changes in numbers of grizzly bears, and to establish a link between grizzly bear numbers and allowable known, human-caused mortality, the allowable mortality level should be recalculated annually using the most recent 3-year sum of females with cubs as described in N1, item No. 8 (above). This allowable human-caused mortality is conservative because:

- (a) It is applied to a minimum estimate of the number of bears based on the number of females with cubs seen in the BE, corrected by a conservative sightability factor (as detailed in B1, item No. 5). It is recognized that the actual total number of bears is likely higher than the estimate.
- (b) According to Harris (1984), a grizzly bear population can sustain 6 percent human-caused mortality without experiencing a decline.

For the subgoal of 14 females with cubs, which indicates a minimum of 280 bears, 4 percent annual, known, human-caused mortality is equivalent to:

$280 \times 0.04 = 11$ total known human-caused bear mortalities, or $11 \times 0.30 = 3$ known human-caused female bear mortalities.

B11. Determine Conditions at Which the Species is Viable and Self-Sustaining. Reevaluate and Refine Criteria as New Information Becomes Available. Grizzly bears in the BE will be viable when monitoring efforts indicate that recruitment and mortality are at levels supporting a stable or increasing number of bears, and reproducing females are distributed throughout the recovery area. The BE grizzly bear population should be judged as meeting recovery requirements when, as determined through systematic monitoring throughout the recovery area, it meets each of the following criteria:

- (a) The average number of unduplicated female grizzly bears with cubs is at least 14 annually on a running 6-year average (this number is subject to revision as new information becomes available).

- (b) At this time no BMU's have been delineated. Delineation and occupancy of BMU's will be determined at a future date as data on home range size and habitat use becomes available.
- (c) The female mortality subgoal for this ecosystem is zero until the 3 key parameters monitored indicate at least 90 bears. At that time, the known, human-caused mortality level is not to exceed 4 percent of the number of bears based on the most recent 3-year sum of females with cubs, minus known adult female mortality. Additionally, no more than 30 percent of known, human-caused mortality shall be females.

B111. Determine Monitoring Methods and Criteria According to the Rules and Procedures Established for Grizzly Bears in the BE. The maintenance of a secure and robust number of grizzly bears will require ongoing careful monitoring. This monitoring should provide data to allow reasonable assurance that the numbers of bears are secure. The greater the number of parameters monitored, the greater the assurance that the information is representative of the status of the bears.

With this in mind, a system has been developed to monitor a wide range of parameters, with three being of primary importance. These include: unduplicated number of females with cubs seen annually, the distribution of females with young throughout the ecosystem, and the annual number of known human-caused mortalities. Other factors also should be monitored to increase the confidence in the information, but these three parameters should be the key criteria used to judge the status of the bears. The subgoal of distribution by females with young is designed to demonstrate adequate dispersion of the reproductive cohort within the recovery area. Distribution of reproducing females also provides evidence of adequate habitat management assuming that successful reproduction indicates habitat sufficiency. Finally, adequate distribution of family groups can indicate future occupancy of these areas because grizzly bear offspring, especially female offspring, tend to occupy habitat within or near the home range of their mother after weaning.

B112. Establish Reporting Procedures and Systems to Gather and Evaluate Information on Numbers of Bears According to the Rules and Procedures Established for Grizzly Bears in the BE. All cooperating agency personnel should report females with cubs of the year on a standard form. Agency personnel should be assigned to and responsible for one or more BMU's to ensure consistency in collection of reporting information. It should be the responsibility of such personnel to submit an annual report of the number of verified females with cubs for their respective BMU's to the appropriate reporting point by December 1 for compilation.

To eliminate duplicate reports, all sightings and track data should be reviewed by agency representatives at an annual meeting. A running 6-year average of unduplicated females with cubs should be calculated using the annual report data. All unduplicated females with cubs outside the recovery area line but within 10 airline miles of the line shall be counted as part of the total number seen within the recovery area during that year. Additionally, observations of females with young should be plotted annually for a running 6-year cumulative total for determination of occupancy.

B12. Determine Current Conditions on the Number and Status of the Bears According to the Rules and Procedures Established for Grizzly Bears in the BE. The last documented death of a grizzly bear in the BE occurred in 1932. Although occasional reports of grizzly sightings persist in the BE (Melquist 1985), no verified tracks or sightings have been documented in recent years. A limited 2-year remote-sensitive camera study in the Clearwater region did not detect the presence of grizzly bears (Kunkel et al. 1991). Based upon the best scientific evidence available, there are no grizzly bears in the BE.

B121. Gather Information on Behavior, Physiological Condition, Distribution, Density, Food Habits, Home Range, Reproduction, Survivorship, Denning Activities, Genetic Diversity, and Disease. There is no biological information on grizzly bears in the BE because no studies were conducted before grizzly bears were extirpated and because there are no grizzly bears presently in the BE. Information on grizzly bears in other regions has been gathered since the 1960's through various research studies sponsored by

universities; the Idaho Department of Fish and Game; Montana Department of Fish, Wildlife, and Parks; Wyoming Department of Fish and Game; National Park Service; Fish and Wildlife Service; and the Forest Service. These data are presented in biological journals and in annual project reports. If bears are reintroduced, these biological factors should be monitored in the BE.

- B13. Identify the Man-Related Limiting Factors.** Mortality from direct and indirect sources within and surrounding the recovery area must be addressed if grizzly bears are to recover.
- B131. Identify Sources of Direct Mortality.** Sources of direct mortality include illegal killing, accidental deaths and management-associated removals. Accidental deaths include mistaken identities by black bear hunters and other big game hunters, and road kills (automobiles, trains, etc.) or handling error when bears are captured for management or research. Mortality also can result from control actions by private citizens such as livestock operators, apiarists, outfitters, and resort operators, for protection of property, and by hunters defending their kills. Direct mortality also may occur during agency control of nuisance bears for livestock conflicts, property damage, or situations threatening to human life. Live removal of a grizzly to a zoo or another ecosystem also is considered a mortality because the bear is lost from the BE. Mortality occasionally results from actions of private citizens for self defense or defense of others.
- B132. Identify Sources of Indirect Mortality.** Sources of indirect mortality are those actions that bring bears and people into conflict such as road use, land development, and recreation.
- B133. Determine Effects of Human Activities on Bears and Bear Habitat and Incorporate the Results Into Management Plans and Decisions on Human Activities According to the Rules and Procedures Established for Grizzly Bears in the BE.** Conduct research and monitor to document the effects of timber harvest, road use, oil and gas exploration, hard rock mining, and recreation on behavior, physiological condition, distribution, density, food habits, home range, reproduction, survivorship, and denning activities.

B2. Redress Limiting Factors on Numbers Should Bears be Reintroduced According to the Rules and Procedures Established for Grizzly Bears in the BE.

B21. Reduce Sources of Direct Mortality According to the Rules and Procedures Established for Grizzly Bears in the BE. Recommended annual human-induced grizzly bear mortality subgoal for expediting species recovery is zero. This mortality subgoal may not be achieved because some level of human-bear conflict within the BE is inevitable, but every effort should be made to limit mortalities to zero in the initial phases of recovery when the numbers of bears will be low.

Known, human-caused mortalities in excess of a level sustainable at a given number of unduplicated female with cubs reports could result in decline while mortalities below this level would likely result in an increase in numbers of bears. As numbers of grizzlies increase, the number of sustainable, known, human-induced mortalities also increases. The number of known females with cubs should be used to calculate what is believed to be a conservative estimate of the number of bears present. Therefore, the projected limit of known, human-caused mortalities set at less than 4 percent of this number is conservative.

However, in the near term after the initial reintroductions, there will be insufficient numbers of bears in the BE to sustain even very low levels of human-caused mortality. Management should strive to prevent all human-caused mortality.

B211. Reduce Illegal Killing Should Bears be Reintroduced According to the Rules and Procedures Established for Grizzly Bears in the BE. Use all methods possible to minimize illegal kills.

B2111. Coordinate State, Federal, and Tribal Law Enforcement Efforts According to the Rules and Procedures Established for Grizzly Bears in the BE. Provide a concerted law enforcement effort by designating a specially trained law enforcement team coordinated by the Fish and Wildlife Service to minimize the illegal kill of grizzly bears. One or more persons representing the Fish and Wildlife Service, Forest Service, State of Montana, and

State of Idaho should be appointed. Each member should receive specialized training to work on illegal kills of grizzly bears. The team should be trained initially by the Montana Department of Fish, Wildlife, and Parks; Fish and Wildlife Service; Idaho Department of Fish and Game; and other biologists in such matters as distribution, home ranges of identifiable bears, movements by season, mating habits, current location of radio-marked bears and other biological information that may be helpful to the team. Representatives from the Forest Service should be encouraged to obtain training in order to more ably assist in gathering field evidence.

All incidents of grizzly bear kills, suspected illegal activities and rumors of kills should be communicated between the enforcement team and their respective agencies on a daily basis or as often as is practical.

The Enforcement Team Leader should keep all members of the enforcement team, the Idaho Department of Fish and Game, and Montana Department of Fish, Wildlife, and Parks informed and should organize coordination meetings and protocol as needed. Special emphasis should be directed at covert operations which may be operating commercially.

The Enforcement Team should operate through an interstate, interagency agreement under the direction of the Fish and Wildlife Service.

It is imperative that the group leader establish a line of communications and rapport with all field personnel, field office staff and local law enforcement agencies in order that he may be notified immediately on a violation or threat of a violation.

Public assistance should be solicited in reporting suspected or known illegal kills. Persons furnishing information which leads to a finding of

civil violation or a conviction of a criminal violation of 50 CFR, Part 17.40 regarding grizzly bears, can be rewarded up to one-half of the fine or civil penalty.

States having toll free numbers for reporting violations or for information should publicize their numbers as means of reporting grizzly problems and grizzly bear deaths.

- B2112. Reduce Mortality Associated with Big Game Hunting and Mistaken Identity Killing by Black Bear Hunters According to the Rules and Procedures Established for Grizzly Bears in the BE.** State conservation agencies should provide information to big game hunters to avoid conflicts with grizzly bears, including camp sanitation, food storage, and game retrieval. Agencies will continue to make information available to all black bear hunters to assist them in distinguishing between black and grizzly bears. State agencies should issue special warnings to black bear hunters and other big game hunters using areas frequented by grizzly bears. Black bear hunting regulations should be modified as appropriate to reduce areas of significant conflicts or time periods of conflict. Special attention should be given to evaluate and modify, as necessary, bear baiting and the use of hounds for bear hunting in the recovery area.
- B2113. Investigate and Prosecute Illegal Killing of Grizzly Bears.** The special enforcement team should investigate all grizzly bear mortalities and recommend prosecution when appropriate.
- B2114. Reduce Accidental Deaths According to the Rules and Procedures Established for Grizzly Bears in the BE.** Minimize those activities that result in attraction of bears to sites of potential conflict and management error that might result in losses.

B21141. Increase Efforts to Clean Up Carrion and Other Attractants in Association With Roads, Human Habitation, and Developed Areas Within Recovery Areas According to the Rules and Procedures Established for Grizzly Bears in the BE. All agencies should evaluate and improve warning signs along highways and roads in high-use grizzly bear areas. All agencies should increase efforts to clean up carrion and other attractants along highways and other routes within occupied grizzly bear range.

B21142. Reduce Losses Due to Handling of Bears During Research and Management Actions According to the Rules and Procedures Established for Grizzly Bears in the BE. To reduce losses due to handling of bears (e.g. an overdose of immobilizing drugs or improper handling), only experienced personnel that are certified by a sponsoring unit having the required permits and knowledge in the application of capture techniques, immobilizing drugs, transportation of drugged animals, and scientific data collection should handle grizzly bears. Only the safest, most effective drugs available should be used. A detailed manual for trapping, immobilizing, transporting and handling grizzly bears has been prepared for use by all agencies as a training and reference manual.

B21143. Reduce Losses Due to Predator and Rodent Control and Ensure That Such Control is Accomplished According to the Rules and Procedures Established for Grizzly Bears in the BE. Agencies responsible for licensing, conducting, or in any way overseeing rodent damage control programs, using toxic substances in occupied grizzly bear habitat, should try and minimize the potential for grizzly bears to consume poisoned rodents or bait.

B21144. Ensure That Control of Nuisance Bears is Accomplished According to the Rules and Procedures Established for Grizzly Bears in the BE. All management control actions should be carried out according to the Special Rule for grizzly bears in the BE. The law enforcement team should carefully investigate every case of grizzly bear mortality including those alleged to be self-defense or defense of others.

B212. Appoint a Grizzly Bear Mortality Coordinator for the BE. The Fish and Wildlife Service should appoint an employee of the Idaho Department of Fish and Game as grizzly bear mortality coordinator for Idaho. His/her duties should include the tabulation of annual grizzly bear mortalities for all grizzly bear ecosystems in Idaho, and assuring that all cooperating agencies and the public have current mortality data. The coordinator should maintain key contacts with all agencies and keep detailed records of all conditions surrounding each grizzly bear death. A standard form meeting the needs of all agencies should be used. All reports of mortalities from Idaho should be sent to the Interagency Grizzly Bear Committee (IGBC) grizzly bear mortality coordinator for central record keeping.

B22. Identify and Reduce Sources of Indirect Mortality According to the Rules and Procedures Established for Grizzly Bears in the BE. Ongoing human actions in grizzly habitat contribute to bear-human conflicts that often result in bear deaths. Management of these activities in consideration of the needs of bears will reduce indirect mortality.

B221. Ensure That Livestock Grazing is Accomplished According to the Rules and Procedures Established for Grizzly Bears in the BE. Applicable guidelines regarding spatial and habitat requirements for grizzly bears will be addressed during development of the EIS. On Federal lands, Forest Plan standards and guidelines for other resources (fisheries, watershed, elk) will be adhered to. On State and private lands, agencies and field personnel of agencies involved in grizzly bear management should strive to educate grazers about ways to minimize potential conflicts with grizzly bears through a cooperative extension effort.

- B222. Ensure That Timber Harvest and Road Building are Accomplished According to the Rules and Procedures Established for Grizzly Bears in the BE.** Applicable guidelines regarding spatial and habitat requirements for grizzly bears will be addressed during development of the EIS. On Federal lands, Forest Plan standards and guidelines for other resources (fisheries, watershed, elk) will be adhered to. On State and private lands, agencies and field personnel of agencies should adhere to applicable state forest practices and water quality laws.
- B223. Ensure That Mining and Oil and Gas Exploration and Development is Accomplished According to the Rules and Procedures Established for Grizzly Bears in the BE.** On Federal lands, Forest Plan standards and guidelines for other resources (fisheries, watershed, elk) will be adhered to. On State and private lands, agencies and field personnel of agencies should adhere to applicable state forest practices and water quality laws.
- B224. Ensure That Recreation is Accomplished According to the Rules and Procedures Established for Grizzly Bears in the BE.** On Federal lands, Forest Plan standards and guidelines for other resources (fisheries, watershed, elk) will be adhered to. On State and private lands, agencies and field personnel of agencies involved in grizzly bear management should communicate ways to minimize bear-human conflicts as a cooperative extension effort.
- B225. Coordinate With State and County Governments to Provide Information on How Land Development and Land Use Decisions Can Be Made Compatible with Grizzly Bear Habitat Needs According to the Rules and Procedures Established for Grizzly Bears in the BE.** Land management agencies, State regulatory agencies, county commissioners, and county zoning boards should be encouraged to give consideration to the needs of grizzly bears in any actions requiring their approval. When homes, summer homes, cabins, camps, farm operations, dog kennels, pig farms, garbage dumps and other attractants, and livestock carcass disposal sites are allowed within habitat occupied by grizzly bears, they will directly or indirectly effectively reduce the space and habitat necessary for bear survival. On private lands,

wildlife managers should give consideration to contacting local landowners about sanitation practices to minimize conflicts and to purchase, lease or obtain easements if habitat components are necessary to the survival of the species.

- B23. Coordinate, Monitor and Report on Activities Relating to Redressing Limiting Factors According to the Rules and Procedures Established for Grizzly Bears in the BE.** This should be accomplished through the activities of the Recovery Coordinator and the management system outlined in the Special Rule for the BE. Actions should be taken by the management committee as necessary to address needs and to ensure implementation of the Bitterroot Grizzly Bear Recovery Plan Chapter and procedures established for grizzly bears in the BE.
- B3. Establish the Habitat Based Recovery Criteria Required for a Recovered Number of Grizzly Bears According to the Rules and Procedures Established for Grizzly Bears in the BE.** Careful definition of the experimental population area will allow agencies and the public to know where grizzly bears and grizzly habitat will be managed. Information on range and the biology of bears as well as the nature and quality of habitat is necessary to ensure that habitat is properly managed and that the habitat delineated has sufficient quality and quantity to support a viable population.
- B31. Define the Experimental Population Area Within Which the Grizzly Bear Will be Managed According to the Rules and Procedures Established for Grizzly Bears in the BE if Designation of an Experimental Population Under Section 10(j) is Selected Through the EIS Process.** In 1986, the grizzly habitat evaluation area for the BE was delineated by members of the Northwest Ecosystem Management Subcommittee of the IGBC (Figure 1). This was a geographic evaluation area delineated to ensure a timely and critical examination of a central core area in the Bitterroot Mountains. Because of limited data, the evaluation area did not include potentially suitable habitat south of the Salmon River or north along the Idaho-Montana border. The results of this evaluation demonstrated that there exists a core area of 14,200 km² (5,500 mi²) that is suitable grizzly bear habitat. The habitat evaluation did not extend beyond the area shown in Figure 1 and it is probable that suitable grizzly bear habitat exists beyond both the northern and southern boundaries of this initial evaluation

area. It is proposed that the experimental area be designated as part of the EIS process and during the development of the Bitterroot Grizzly Bear Special Rule. Considerations of the area for recovery would be centered upon the core area identified in the evaluation process, with adjacent lands considered, as necessary, to achieve the objectives of grizzly bear recovery.

- B32. Delineation of BMU's According to the Rules and Procedures Established for Grizzly Bears in the BE.** Delineation of BMU's will be determined when data on home range size and habitat use are available or existing data are deemed applicable to the BE.
- B33. Conduct Research to Determine the Extent of Grizzly Bear Range According to the Rules and Procedures Established for Grizzly Bears in the BE.** A concerted effort is needed by cooperating agencies to conduct studies on home range and range expansion of grizzly bears within the Bitterroot Recovery Area after reintroduction should that be the approach selected through the EIS process.
- B34. Conduct Research to Determine Habitat Use, Food Habits, Home Range Size, and Seasonal Habitat Preference According to the Rules and Procedures Established for Grizzly Bears in the BE.** These data should be used to ensure that habitat values are available and that ongoing management actions do not significantly degrade these habitat values. Research should be conducted as needed by cooperating agencies. Results are to be used to judge the effectiveness of management policies. Policies should be adjusted as necessary when research demonstrates the need to do so according to the rules and procedures established for grizzly bears in the BE.
- B35. Conduct Research to Determine the Relationship Between Habitat Values, Physiological Condition of Bears, and the Ability of the Habitat to Sustain a Bear Density Necessary to Achieve Viable Size After Reintroduction Should That Be the Approach Selected Through the EIS Process.** Research should be conducted as needed by cooperating agencies. Results are to be used by management agencies to judge the effectiveness of management policies. Policies should be adjusted as necessary when research demonstrates the need to do so.

B4. Monitor Numbers of Bears and Habitat. Monitoring is necessary for determination of status and to assess the success of conservation efforts associated with recovery. An increasing number of bears validates ongoing management efforts, while a decreasing number indicates a failure to address problems.

B41. Monitor Bears During and After Reintroduction, Should That Be the Approach Selected Through the EIS Process, According to the Rules and Procedures Established for Grizzly Bears in the BE. Develop and apply techniques to ensure the number of bears is carefully monitored.

B411. Develop and Conduct an Intensive Monitoring System to Measure the Annual Number of Females with Cubs, Family Groups, and Number of Human-Caused Mortalities According to the Rules and Procedures Established for Grizzly Bears in the BE. (The method is detailed in B11 and B111.)

B412. Develop a System of Agency Responsibilities to Collate, Analyze, and Report Annual Information on Number of Bears According to the Rules and Procedures Established for Grizzly Bears in the BE. (The system is detailed in B112.)

B413. Standardize Observation Report Forms and Methods, and Develop Training Methods for all Persons Involved in Reporting Sightings of Females With Cubs and Family Groups According to the Rules and Procedures Established for Grizzly Bears in the BE. (Reporting system detailed in B112.) Training methods should involve identification materials to enable all individuals involved to be able to identify the bear species seen or to be able to report unknown species. Training methods should be distributed to all agency reporting personnel and should be formally presented in training sessions to seasonal and staff personnel at the beginning of each year in order to ensure quality observation data.

B4.2. Monitor Habitat Before, During, and After Recovery According to the Rules and Procedures Established for Grizzly Bears in the BE. Develop and apply techniques to ensure the habitat is carefully monitored and that habitat is sufficient to sustain a recovered number of grizzly bears.

- B421. Report Management Activities Used to Successfully Manage Habitat According to the Rules and Procedures Established for Grizzly Bears in the BE.** To be completed as part of the ongoing business of the management agencies, the Bitterroot Ecosystem Management Committee, and the Recovery Coordinator. Standards for report content and format should be developed.
- B422. Develop a System to Ensure Habitat Monitoring and Monitoring of Bear Numbers That Will Continue in Force After Recovery According to the Rules and Procedures Established for Grizzly Bears in the BE.** To be completed as status data indicate attainment of the recovery targets. The purpose of this is to ensure proper habitat and monitoring so that the species will remain recovered without protection under the Act.
- B5. Manage Populations and Habitat According to the Rules and Procedures Established for Grizzly Bears in the BE.** Apply the best management techniques to achieve recovered populations.
- B51. Refine Procedures for Relocation of or Aversively Conditioning Nuisance Grizzly Bears According to the Rules and Procedures Established for Grizzly Bears in the BE.** Develop and coordinate procedures to expedite the relocation of nuisance bears, review and update interagency agreements. Relocate bears within 24 hours and continue searches for new release areas. Research and develop methods to deal with problem bears and test and develop aversive conditioning of bears, if possible.
- B52. Develop and Test Procedures for Reintroducing Grizzly Bears Into the BE According to the Rules and Procedures Established for Grizzly Bears in the BE, If That Alternative is Selected as Part of the EIS Process.** Sources of bears would be ecosystems with larger populations, including those in Canada. If reintroduction of bears was selected, initially a small number of bears would be released over a period of several years. This is due to logistic concerns and the need to evaluate the reintroductions before any further reintroductions would be considered. Both male and female bears would be released to establish the basis for a breeding population. Only bears with no history of human conflict would be selected.

Public safety and maximizing the probability of the success of the effort would be primary considerations in selecting reintroduction sites and the types of bears that would be moved. Therefore, reintroduced bears would be released into high quality habitat in back-country areas in the Selway-Bitterroot Wilderness where the potential for human-bear conflict would be minimal. All reintroduced bears would be closely monitored. Strict interagency guidelines and agreements would be developed to allow for the aversive conditioning, relocation, or removal of any reintroduced bear that came into conflict with people.

- B53. Manage Populations and Habitats on Private and State Lands According to the Rules and Procedures Established for Grizzly Bears in the BE.** Review existing grizzly bear standards and guidelines utilized by the Forest Service and other agencies and landowners. Develop and apply management actions prior to recovery that maintain or enhance habitats. Recommend land use activities compatible with grizzly bear requirements for space and habitat; minimize potential for human/bear conflicts. Implement cooperative efforts with State lands agencies and private land owners to assist in application of methods and actions sensitive to grizzly bear habitat needs. Cooperative efforts between county, State, and Federal land management agencies would facilitate this.
- B6. Develop and Initiate Appropriate Information and Education Programs According to the Rules and Procedures Established for Grizzly Bears in the BE.** Managing human-caused grizzly mortalities is a major factor in effecting the recovery of the grizzly bear. Therefore, it is crucial to the recovery effort that the public understands reasons for actions in order to generate favorable or tolerant attitudes toward the bear. The IGBC has appointed an Information and Education subcommittee to work on the development of education programs and information dissemination. Private conservation organizations interested in the recovery of grizzly bears could be of assistance by including appropriate information in their publications and news releases.
- B61. Evaluate Public Attitudes Toward Grizzly Bear Management, Grizzly Habitat Protection and Maintenance, Land Use Restrictions, Mitigating Measures, Relocation of Bears, Hunting, Nuisance Bear Control Actions, and Habitat Acquisition or Easement According to the Rules and Procedures Established for Grizzly Bears in the BE.** Public attitudes are a major part of the success or failure of

grizzly bear recovery efforts. Understanding of these attitudes and the basis for public sentiment is important. Research surveys designed by qualified scientists experienced in such sampling should be initiated. The basic questions and attitudes of interest should be formulated by the management subcommittee members. The data would be useful in designing public outreach programs to foster public support for recovery programs.

- B62. Formulate Ways to Improve Public Attitudes Toward Grizzly Bears and the Grizzly Bear Recovery Program According to the Rules and Procedures Established for Grizzly Bears in the BE.** Agencies should use the data on public attitudes to formulate public relations and information and education (I&E) programs through the respective I&E offices of each agency and the I&E subcommittee of the IGBC. Agencies having the authority and responsibility for control actions should institute and carry out information and education programs. Citizens who live in or near grizzly habitat should be kept informed of the appropriate agency contacts for assistance should a bear-human conflict arise.
- B7. Ensure That Regulations are Consistent and Up To Date According to the Rules and Procedures Established for Grizzly Bears in the BE, and that International Cooperation and Communication are Maintained with all Other Countries Where Brown Bears are Being Managed.**
- B71. Recommend Revisions in Federal and State Regulations, as Necessary According to the Rules and Procedures Established for Grizzly Bears in the BE.** Regulations may be revised to ensure regulatory adequacy. These regulations include CFR regulations, and national forest regulations regarding sanitation. State regulations involved include regulations on the taking of bears.
- B72. Coordinate and Exchange Information and Expertise Concerning Bear Research and Management with Canada and Other Countries. This Will Increase Information Exchange of the State-Of-The-Art in Bear Research and Management, Promote International Cooperation, Improve Management, and Facilitate Recovery Efforts.** All agencies and the Grizzly Bear Recovery Coordinator should exchange information and expertise concerning recovery activities with Canada and other countries managing bears. This exchange will promote international cooperation and improve management and recovery efforts. International cooperation is important to the success of the grizzly bear recovery effort. Four grizzly

populations span the United States/Canada border and the cooperation and involvement of Canadian management authorities will facilitate conservation of grizzlies in the United States. Management authorities from British Columbia and Alberta need to be full participants in all aspects of the recovery program. Research conducted in Canada on grizzly bears is applicable to situations in the United States and cooperation in funding such research, cooperative efforts involving personnel from both countries, and sharing of research results is vital. Joint United States/Canadian management of bears and bear habitat is necessary for the four ecosystems that lie along the United States/Canada border, as well as for international cooperation to obtain bears for reintroduction into the BE.

- B8. Ensure That the Bitterroot Chapter Recovery Tasks Address the Five Factors in Section 4(a)(1) of the Endangered Species Act.** The five factors in section 4(a)(1) of the Endangered Species Act are:
- (1) the present or threatened destruction, modification, or curtailment of habitat or range,
 - (2) over utilization for commercial, recreational, scientific, or educational purposes,
 - (3) disease or predation,
 - (4) inadequacy of existing regulatory mechanisms, and
 - (5) other natural or manmade factors affecting the continued existence of grizzly bears in the BE.
- There is overlap between the five factors and the tasks in this chapter. Many tasks address several of the factors. To simplify the relationships, Table 1 presents a matrix of the relationships between the tasks and the factors. All tasks are in this Bitterroot grizzly bear recovery chapter.

The tasks in this chapter address these five factors as follows:

Table 1. The relationship between the five factors in section 4(a)(1) and the tasks in this chapter.

FACTOR	RECOVERY PLAN BITTERROOT CHAPTER TASK NUMBER
1. Present or threatened destruction, modification or curtailment of habitat	B1, B11, B111, B12, B121, B131, B132, B133, B21141, B21143, B22, B221, B222, B223, B224, B225, B3, B31, B32, B33, B34, B35, B4, B42, B421, B422, B5, B53
2. Over-utilization ¹	B1, B11, B111, B112, B12, B13, B131, B132, B133, B2, B21, B211, B2111, B2112, B2113, B2114, B21141, B21142, B21143, B21144, B212, B22, B221, B222, B223, B224, B225, B4, B41, B411, B412, B413, B5, B51, B6, B61, B62
3. Disease or predation ²	B11, B111, B121, B211, B2111, B2112, B2113, B2114, B21141, B21143, B21144
4. Inadequacy of regulatory mechanisms ³	B1, B111, B112, B132, B133, B2, B21, B211, B2111, B2112, B2113, B2114, B21141, B21142, B21143, B21144, B212, B22, B221, B222, B223, B224, B225, B23, B413, B4, B42, B421, B422, B53, B6, B61, B62, B7, B71, B72
5. Other factors	B21144, B51, B52, B7, B71, B72

¹ Over-utilization is related to grizzly bear mortality and the factors causing mortality.

² Disease or predation are treated here as factors that cause the death of bears by predation by humans, as in illegal killing, as well as factors that may cause physiological stress from either habitat-related food stress, or human-caused physiological stress related to disturbance.

³ Regulatory mechanisms are those factors related to ensuring systems and responsibilities to monitor habitat or numbers of bears and requiring actions to make human activities compatible with grizzly bear recovery.

LITERATURE CITED

- Aune, K. and W. Kasworm. 1989. Final report East Front grizzly bear study. Montana Department of Fish, Wildlife, and Parks. Helena, Montana. 332 pp.
- Davis, D. and B. Butterfield. 1991. The Bitterroot grizzly bear evaluation area. A report to the Bitterroot Technical Review Team. Interagency Grizzly Bear Committee, Denver, Colorado. 56 pp.
- Harris, R. 1984. Harvest age structure as an indicator of grizzly bear population status. M.S. Thesis, University of Montana, Missoula. 204 pp.
- Interagency Grizzly Bear Committee. 1987. Grizzly bear compendium. U.S. Fish and Wildlife Service, Missoula, Montana. 540 pp.
- Knight, R.R., D.J. Matson, and B.M. Blanchard. 1984. Movements and habitat use of the Yellowstone grizzly bear. Unpublished report to the Interagency Grizzly Bear Committee. National Park Service, Forestry Sciences Lab., Montana State University, Bozeman. 177 pp.
- Knight, R.R., J. Beecham, B. Blanchard, L. Eberhardt, L. Metzgar, C. Servheen, J. Talbot. 1988. Equivalent population size for 45 adult females. Report of Yellowstone Grizzly Bear Population Task Force. Unpublished. National Park Service, Bozeman, Montana. 7 pp.
- Kunkel, K.E., W.E. Clark, C. Servheen. 1991. A remote camera survey for grizzly bears in low human use areas of the Bitterroot Grizzly Bear Evaluation Area. Draft Report, Idaho Fish and Game, Boise. 11 pp.
- Melquist, W.E. 1985. A preliminary survey to determine the status of grizzly bears (*Ursus arctos horribilis*) in the Clearwater National Forest of Idaho. Idaho Coop. Fish and Wildlife Research Unit, University of Idaho, Moscow. 54 pp.
- Moore, W. 1984. The last of the Bitterroot grizzly. Montana Magazine. (November-December): 8-12.
- Moore, W. 1996. The Grizzly Bear in the Bitterroot. In press.
- Servheen C., M. Nadeau, and C. Queen. 1990. A survey for grizzly bears in the Bitterroot Grizzly Bear Evaluation Area. Idaho Department of Fish and Game. Unpublished Report. Boise, Idaho. 11 pp.