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GRIZZLY BEAR CONSERVATION AND MANAGEMENT: A REVIEW

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Grizzly bears (*Ursus arctos*) represent a great challenge to wildlife management in North America. Recent findings from the Yellowstone area indicate that less than 50 breeding females may exist there (Knight and Eberhardt 1984). Heightened controversy over hunting grizzly bears in northwestern Montana, ongoing confrontations between bears and people in national parks, and controversy over management of grizzly bears that prey on ungulates in Alaska and Canada remain unsolved problems. We assembled information on the biology and human relations of grizzly bears to aid in management of this resource.

POPULATION STATUS

Grizzly bears in North America number between 52,000 and 63,000 (Table 1), considerably higher than Cowan's (1972) estimate of 26,000–31,000. No change in population status is implied by these different estimates. The estimates are conjectural, but the current one may give some idea of relative status. About 65% of the continental population occurs in Alaska. About 20,000 grizzly bears occur in Canada, with highest densities in British Columbia and the Yukon, and lesser numbers in Alberta and the Northwest Territories (Macey 1979). Density in the Canadian Rocky Mountain National Parks is relatively low, but these parks encompass important habitat and hold significant populations (Russell et al. 1979, Hamer and Herrero 1983).

Currently, 6 ecosystems within 4 states south of Canada contain grizzly bears. The Greater Yellowstone Ecosystem (GYE) encompasses portions of Wyoming, Montana, and Idaho (Fig. 1). The Northern Continental Divide Ecosystem (NCDE) in Montana contains the largest population south of Canada and is a continuation of populations in Alberta and British Columbia. The Cabinet-Yaak Ecosystem in northwestern Montana, northern Idaho, and adjacent British Columbia supports a small population (Servheen 1985). The small Selkirk Ecosystem population in northern Idaho and northeastern Washington is contiguous with a small British Columbia population, and interchange with the Canadian population may be a primary reason for its continued existence. The Selway-Bitterroot Ecosystem in east-central Idaho and western Montana historically supported grizzly bears but their presence in this area is now uncertain. Grizzly bears may occasionally occur in the North Cascades of Washington as they are present in low numbers in adjacent British Columbia. Occasionally, grizzly bears are reported outside of the formally classified ecosystems (Fig. 1).

MORTALITY

Causes of mortality for grizzly bears within their current range in North America vary (Table 2). No legal hunting occurs in the lower 48 states except in part of northern Montana. Control actions involving bears that repeatedly

damage property, frequent campgrounds, or have been involved in human death or injury, and bears killed illegally are major sources of mortality in the GYE and the Cabinet Mountains. Deaths related to depredations upon livestock are another major source of mortality. Unintentional mortality due to handling by researchers and managers occurs and should not be discounted.

Mortality in the NCDE is distributed differently from elsewhere in the lower 48 states because of legal hunting. A quota of 25 mortalities/year from all causes has been in effect since 1975. Since then, 106 of 191 recorded mortalities (55%) have been due to legal hunting. Illegal kills, including poaching, constitute 23% of the known mortality, and control actions constitute 17%. Annual known mortalities averaged 19 bears during 1975–1984 with no apparent trend in age composition of the dead bears. Grizzly bears in this region use private agricultural lands where depredations on livestock, honey, oats, barley, and wheat occur.

In Alaska, Alberta, and British Columbia, legal hunting is the major cause of mortality, but illegal mortality and mortality attributable to defense of life and property, including livestock, is substantial. In Alaska, at least 42 bears were killed annually in defense of life and property during 1970–1984, and the unreported kill is considered greater. In 1980–1984, the average was 54.6 bears/year (S. Miller, Alas. Dep. Fish and Game, pers. commun.). In British Columbia, the annual illegal kill may be as high as 25% of the legal kill. One-third of the known mortality of grizzly bears in Alberta was illegal harvest.

Mortality of grizzly bears in the parks in Canada and the United States was usually related to control actions. While in some situations the bear may not be removed or destroyed if it is considered to be acting naturally, pressures to destroy it are high. However, bears that have home ranges outside of the parks may sustain heavy mortality from hunting and poaching (Russell et al. 1979). Poaching has occurred in areas inside parks where grizzly bears concentrate, as on the Brazeau Watershed in Jasper National Park.

Table 1. Estimated numbers of grizzly bears in jurisdictions of North America, mid-1980s.

Jurisdiction	Number
Alaska[a]	32,000–43,000
Yukon Territory[b]	6,600
Northwest Territories[c]	4,000–5,000
British Columbia[d]	6,000–7,000
Alberta[e]	500–1,000
United States south of Canada	600–900
Greater Yellowstone Ecosystem[f]	200
Northern Continental Divide Ecosystem[g]	440–680

[a] Alas. Dep. Fish and Game (unpubl. rep., Juneau, 1978).
[b] B. Smith (Yukon Wildl. Branch, pers. commun.).
[c] Macey (1979).
[d] B.C. Minist. Environ. (1979).
[e] Herrero (1985).
[f] Knight and Judd (1983).
[g] U.S. Fish and Wildl. Serv. (1982).

Mortality rates of >5% of the adult females may result in population declines (Sidorowicz and Gilbert 1981, Knight and Eberhardt 1985). A major problem is that estimates of grizzly bear population size are difficult, time-consuming, and expensive to obtain. Estimates of mortality rates of a species subject to substantial illegal, undocumented harvest are invariably low. Indices to bear populations such as used by Glacier National Park (Keating 1986) may suffice to detect long-term trends, but cannot be considered sufficiently accurate for more refined management where human-induced mortality is high. Legal harvest of grizzly bears can be readily controlled, but other forms of mortality such as poaching and self defense are less easily contained.

Although grizzly bear mortality is attributable to conflicts involving perceived and real threats to life and property, many people have lived in grizzly bear country successfully by taking precautions of storing food, taking care of garbage, and conducting themselves in ways that minimize the possibility of encounters (Herrero 1985). If better public understanding of this problem occurs, coexistence between humans and grizzly bears may be possible.

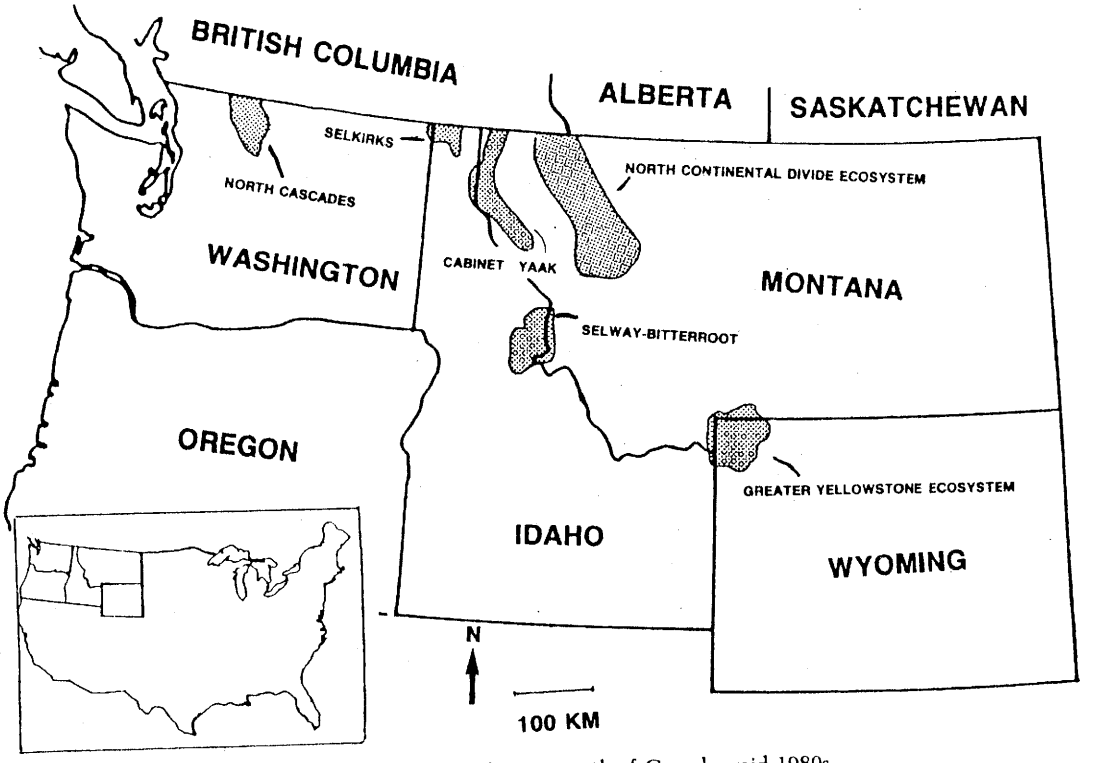

Fig. 1. Distribution of grizzly bears in the United States south of Canada, mid-1980s.

GRIZZLY BEARS AND LIVESTOCK

Grizzly bears kill livestock on Kodiak Island, Alaska, throughout grizzly bear range in Alberta and British Columbia, and in northern Montana and the GYE. While depredations may increase during food shortages (Jorgensen 1983), they occur at other times as well.

In Alberta, 41 of 137 complaints of grizzly bear conflicts during 1970–1979 were attributed to conflicts with livestock (Hunter and Gunson 1980). Twelve bears were destroyed on livestock complaints during 1972–1984, either by ranchers or unintentionally during handling and capture. During 1970–1979, 33 grizzly bear–livestock complaints involved deaths of 37 cattle, 1 sheep, 4 pigs, and 8 horses.

In the GYE, 10 of 37 grizzly bears that were radio-marked during 1974–1979 were known or suspected to kill livestock (Knight and Judd 1983). From 1970 to 1975, records of 20 bears that killed sheep and 2 that killed cattle exist. As many as 14 grizzly bears may have been killed by sheep operators in the GYE since 1975, the year the population was declared threatened. Poaching by sheepherders in the GYE is a significant mortality factor. Knight and Judd (1983) recommended that all sheep allotments within 20 km of Yellowstone National Park (YNP) be abolished. The U.S. Forest Service policy of relocating sheep to alternative ranges where grizzly bears do not occur is a positive effort to resolve this problem (U.S. For. Serv. 1985). Cattle operators are more tolerant of grizzly bears than are sheep operators.

Table 2. Causes of grizzly bear mortality by region[a] of North America. The period of record is given in parentheses under the region.

Cause	Alaska (1970–1983)	British Columbia (1970–1977)	Alberta (1972–1984)	Northwest Montana (1975–1985)	Cabinet Mountains (1950–1983)	Greater Yellowstone Ecosystem (1973–1983)[b]	Greater Yellowstone Ecosystem (1970–1984)
Legal kill	11,601	2,653	305	112	10	4[c]	43[c]
Illegal kill		660[d]	63	38		13[e]	83
Control	598[f]		63[g]	47		6	87[h]
Other			22[i]	7	27[j]	5	10[k]
Unknown						2	14
Natural			2[l]	1		1	13
Total kill	12,199	3,313	455	205	37	31	250
Annual mean	871	414	35	19	1	3	17

[a] Sources of data were as follows: Alaska—Alas. Dep. Fish and Game (unpubl. rep., Juneau, 1984); British Columbia—B.C. Minist. Environ. (1979); Alberta—J. R. Gunson, R. B. Schaufele, and B. H. Treichel (unpubl. rep., Alberta Wildl., Edmonton, 1985; Northwest Montana—Dood et al. (1986); Cabinet Mountains—W. Kasworm (unpubl. rep., Mont. Dep. Fish, Wildl. and Parks, Helena); Greater Yellowstone Ecosystem—Knight and Eberhardt (1984).

[b] Adult females only.

[c] Hunting seasons closed in 1975.

[d] Estimated from Tompa (1984).

[e] Includes 8 illegally shot by nonhunters, 3 killed illegally by hunters, and 2 killed illegally by sheep operators.

[f] Includes defense of life and property; excludes illegal kills and other forms of mortality.

[g] Includes 29 in self-defense and 34 in "problem" situations (related to livestock depredations).

[h] Includes 18 deaths related to capture and handling, plus 4 killed during research activities.

[i] Includes 10 shot by Indians, 7 killed in population research, 5 killed in accidents.

[j] Includes illegal kills, controls (bears killed or moved that repeatedly damage property, frequent campgrounds, or have been involved in human death or injury), poisoning, and defense.

[k] Vehicle collisions.

[l] Includes 1 2-year-old male due to predation, 1 12-year-old female, cause unknown (M. W. Barrett, Alberta Wildl., pers. commun.).

GRIZZLY BEARS AND FOREST MANAGEMENT

While increased human activity in grizzly bear range precipitates conflict, logging may significantly modify bear habitat. Current understanding of grizzly bear–forest management relationships is inadequate for developing rigorous management guidelines, but some generalizations are useful.

Grizzly bears seek abundant forage sources. Logging activities that result in abundant forage such as berries or herbaceous plants may be useful (Mealey et al. 1976, Lindzey and Meslow 1977, Zager et al. 1983). Even-aged stands of second-growth forest with minimal understories provide poor habitat (Lindzey and Meslow 1977, Zager and Jonkel 1983).

Forest management practices that provide a diversity of stand age classes and structure ensure that foraging areas are consistently available. Clear-cutting all mature and overmature timber as quickly as possible will not ensure that adequate grizzly bear habitat will be provided.

The effect timber management has on the carrying capacity for grizzly bears varies regionally, depending on differences in plant succession, timber rotation lengths, effects on ungulates, and forest management plans. Where herbaceous forage may be limiting and logging creates habitats with abundant forage, a net increase in carrying capacity or a redistribution of bears with no change in population status may occur. Where post-logging succession reduces forage production, a net decrease in carrying capacity may result. It is thus important that forest management plans be considered over entire rotations to evaluate the cumulative effects upon bear habitat, and that information on population responses to forest management be obtained.

The effects of forest management on grizzly bears must also be evaluated in terms of bear-human interactions. Intensive forest development in grizzly bear habitat, usually undeveloped land, generally improves human access and consequently increases disturbance as well as human-caused mortality to bears. Efforts to

locate roads away from likely feeding areas such as shrub fields, moist meadows, riparian zones, and other areas frequented by bears will mitigate conflicts. Grizzly bears generally avoid roads and habitat adjacent to roads (Tracey 1977, Schallenberger and Jonkel 1980, McLellan and Mace 1985). Accordingly, road management policies intended to manage human activities are indicated in grizzly bear habitat.

Some grizzly bears avoid areas being logged (Mace and Jonkel 1980, Zager et al. 1983). Coastal grizzly bear populations may be declining as a result of the extensive logging in British Columbia and southeast Alaska (Russell 1974, Smith 1978, Johnson 1980, Archibald 1983). In Alaska, large numbers of bears were destroyed in logging and support camps (Johnson 1980).

The challenge facing forest managers in maintaining grizzly bear populations is to plan and administer human activities within grizzly bear habitat. Necessary elements for accomplishment of this task are an increased understanding of bear-habitat relationships as well as human-bear relationships, a commitment to identify and maintain adequate amounts of grizzly bear habitat in wilderness or semiprimitive status, and a willingness to develop and implement new, innovative approaches toward multiple use management that considers the unique requirements of the grizzly bear.

HYDROCARBON AND MINERAL EXPLORATION AND GRIZZLY BEARS

The effects of hydrocarbon exploration and development on grizzly bears remain poorly understood because long-term responses are likely involved, research is usually short term, and much of the exploration is recent. Differences in effects of exploration activities, which are temporary, and development activities, which are more permanent, need to be recognized. The direct effects of exploration are probably insignificant as compared to the secondary effects of increased human habitation (Weeden 1970). The greatest impact from exploration in Montana resulted from road construction and increased human use of grizzly bear habitat (Schallenberger 1980). Much of the disturbance is associated with the extensive use of aircraft, especially helicopters.

Harding and Nagy (1980) reported that individual bears were affected by loss of habitat due to drilling camps, disturbance during dormancy resulting in den abandonment, and disposal of bears that frequented camps. Aune and Stivers (1983) reported temporary displacement from the immediate vicinity of drilling sites, which varied between individual bears and proximity and type of cover and topography.

Response of grizzly bears to oil and gas exploration may vary with the level of habituation of each individual (McLellan and Mace 1985). Individuals more accustomed to humans may be less affected by exploration activities than those that are not. However, habituated bears may be more subject to illegal and control mortality than nonhabituated bears.

GRIZZLY BEARS AS PREDATORS

Low moose (*Alces alces*) recruitment in interior Alaska and the Yukon has been related to predation by grizzly bears. Ballard et al. (1981) found grizzly bears responsible for 79% of the mortality of radio-marked moose calves in the Nelchina and Susitna River basins in Alaska. A reduction in grizzly bear numbers by transplanting from these areas caused survival of moose calves to improve.

Subsequently, attempts to increase grizzly bear harvest in that area, beginning in 1980 and continuing to present, have doubled the reported harvest over those occurring prior to 1980. As a result of public pressure, conservative harvest management in portions of Alaska and the Yukon, which appeared to maintain relatively stable or increasing populations, is

now being replaced with more liberal regulations designed to reduce bears where they prey on ungulates. In other areas such as the Alaska Peninsula, Kodiak Archipelago, and southeast Alaska, grizzly bears continue to be harvested conservatively and managed as the species of priority.

Management of predator-prey systems such as the moose-predator complex that occurs throughout the North requires the identification of specific management objectives and the ability to monitor changes in population densities of both predator and prey. Generally, it is easier to track changes in ungulate populations than in bear populations. The difficulty of determining grizzly bear population size is compounded by the low productivity of this species, which increases the risk of overharvest. Consequently, harvest management of grizzly bears should err on the conservative side in the absence of reliable data. Grizzly bears recover slowly from overharvest.

HABITUATION–HUNTING–ENFORCEMENT

Bears habituated to people are dangerous because the probability of conflict developing is great (Herrero 1985). While Jope (1985) suggested that habituation to hikers may reduce rates of fear-induced charges and injuries, it is generally believed that habituated bears threaten human safety. It is rarely possible for a human, confronted by a grizzly bear, to assess its habituation level and react accordingly. If the grizzly bear is to be maintained as a truly wild species, then interference with natural behavior patterns and attempts to modify behavior are to be minimized. Efforts should be directed, whenever possible, at modifying human activities in grizzly bear habitat as a means of minimizing conflicts. The presence of habituated grizzly bears in and adjacent to the national parks likely reflects the history of frequent contact without harm with people and their associated food sources.

Hunting may maintain wariness in grizzly bear populations by eliminating the most aggressive and bold animals (Jonkel and Servheen 1977, Servheen 1981). However, this assumes that aggressive and bold animals are most likely to be taken by hunters. It is probable that younger bears which disperse into less secure habitats are most vulnerable to hunting.

Grizzly bear populations in western Europe and Scandinavia appear to survive either in relatively confined but rich habitats or scattered across large more open terrain where human population density is sparse and habitats are poorer. Richer habitats have steep, inaccessible, heavily forested terrain interspersed with meadows. The European grizzly is shy, secretive, and nocturnal, the product of heavy selection pressure from humans over hundreds of years. Conflicts with livestock continue, but virtually none directly with humans. The European bear represents the end result of a mix of a natural and cultural-economic selection process that allows it to survive in low numbers.

Regulations adopted in Kruger National Park, South Africa, may be useful in reducing bear-human conflicts in North America. Conflicts between man and animal are rare at Kruger (J. Verhoef, Kruger Natl. Park, pers. commun.). Tourists must camp in fenced sites, the gates of which are closed daily from sunset to sunrise. Visitors may not leave cars except in prescribed areas, such as rest camps, picnic sites, blinds, and view points. Only 8 people/group are allowed on wilderness trails, and they are protected by 2 armed, experienced game rangers. Hikers must camp in small, fenced base camps. Fences around some camps are electrified to further protect against intruding wildlife. Only 3 full-time law enforcement officers are responsible for tourist control in this park. They control vehicle traffic and watch for people feeding animals and getting out of cars in unauthorized areas. Other personnel are used during peak visitor times. While it is unlikely that North American park officials

will go to these extremes to minimize conflicts between humans and wildlife, conflicts can be minimized without attempting to modify behavior of large mammals.

GREATER YELLOWSTONE ECOSYSTEM GRIZZLY BEARS

Two investigations into the population dynamics of Yellowstone grizzly bears have been completed as of 1985. These studies, initiated in 1959, reached the same conclusion: the grizzly bear population is declining. The several agencies charged with managing grizzly bears in this region have developed elaborate management plans that are updated regularly. Numerous meetings and conferences to coordinate activities and update the common information base are conducted. There is substantial public support for preserving the grizzly bear in the region, and a legal mandate to maintain the species at a viable population level. However, the population remains in jeopardy. As of 30 September 1985, known mortality for 1985 for GYE grizzly bears consisted of 5 females, 1 killed in a vehicle collision inside YNP, 3 killed by hunters, and 1 killed in a control action by Montana Department of Fish, Wildlife, and Parks personnel (R. R. Knight, U.S. Natl. Park Serv., pers. commun.).

The total area of the GYE is roughly 33,700 km^2, with about 30% of this being in YNP. The level of formal wilderness protection surrounding YNP has increased by about 50% since 1970 until now there are about 18,000 km^2 of designated wilderness or national park lands. The remainder generally has a semiprimitive aspect. The level of land protection in this ecosystem is currently comparable to that of the NCDE, which has been adequate to support a grizzly bear population.

A number of estimates of the GYE population has been obtained, primarily from the work of Craighead et al. (1974) and Knight and Eberhardt (1985). The latter researchers estimated that the grizzly bears declined at an annual rate of 1.8% between 1974 and 1980. Population projections of low numbers of breeding females, perhaps less than 50, suggest the precarious nature of the population (Knight and Eberhardt 1985).

The studies conducted on these grizzly bears likely are representative of the entire population, with grizzly bear activity in outlying areas considered to be occasional movements by bears outside of their normal home ranges and by bears that have dispersed. Most probably the population is controlled by human-caused mortality.

The YNP population may be serving as a source of dispersing individuals that are colonizing adjacent habitat outside of YNP. This habitat may have been made available by discontinuance of sheep grazing allotments in the late 1950s and 1960s, increased wilderness protection, and other land-use changes. For example, the 28 bands of sheep grazing in the upper Boulder River drainage of Montana have been reduced to one. Reductions of garbage availability would have stimulated grizzly bears to range further in search of forage sources and may have promoted dispersal.

While further investigations are needed to determine whether significant numbers of grizzly bears exist permanently outside of YNP, the current trends suggest that this is likely to occur in the future. A distribution map developed by Knight and Eberhardt (1985) shows that the bears commonly occur in 3 states and on lands administered by several public agencies, as well as on privately owned lands. The attempt to stabilize or increase numbers of the grizzly bear in Yellowstone is obviously the joint responsibility of many.

This situation represents a classic example of the conflict between competing human uses in a region that contains a species of wildlife that is not compatible. The record of mortality of grizzly bears (Table 2) illustrates how that conflict has been resolved, and why the bear population has declined. No legal hunting has occurred since 1974, but legal mortality relat-

ed to management activities accounted for 36% of the known mortality during 1970–1984. Illegal mortality, attributable to hunters and sheep grazers, accounted for 33% of the known mortality over the same period. Mortality was variable among years, but Knight and Eberhardt (1985) indicated that if the average annual loss of 4 adult females could have been reduced to one or two, the population would probably stabilize. That difference is small but critical.

CONCLUSIONS AND RECOMMENDATIONS

As encroachment of humans into grizzly bear habitat increases, bear-human conflicts will also increase unless enlightened ethics which increase human understanding and tolerance occur. While fear of encounters with the grizzly bear prevails, the record shows that grizzly bears, not humans, are in greatest danger. Given that the person involved in a confrontation with a grizzly bear will not perceive this to be the case, the task for managers is to minimize confrontations on behalf of all concerned. C. S. Elton (1958:50) wrote, "This means looking for some wise principles of co-existence between man and nature, even if it has to be a modified kind of man and a modified kind of nature."

In areas of high recreational use in the national parks and surrounding grizzly bear habitat, efforts to reduce contact between man and grizzly bear must be pursued. While public information programs, closures of important grizzly bear use areas, better sanitation, and increasing issuance of citations for violations of regulations are partially effective, further efforts are needed. Fencing of campgrounds, establishment of back-country enclosures that separate campers from grizzly bears, day-use areas, and quotas for human use of back-country areas are measures needed to further reduce conflicts. Reductions in speed limits along paved highways and restriction of traffic in spring on winter ranges where carrion exists for grizzly bears to feed upon are indicated.

Management must respond rapidly to problems between people and grizzly bears on private lands. Unless personnel so charged rapidly address the problem, private citizens will kill bears. Measures warranted include purchasing land, aversive conditioning in selected areas, and adjustments in human activities such as limited access and improved sanitation procedures.

An interagency review process should exist to ensure that no unnecessary roads are built in areas designated as critical grizzly bear range. Where roads are considered necessary, control of access should be maintained to minimize disturbance and mortality.

Heavy penalties should be levied against individuals who deliberately provoke grizzly bears into acts which can be used to justify shooting them. A special attempt to reduce unintentional grizzly bear mortality via hunter training programs should be pursued. Black bear (*U. americanus*) hunting restrictions should be treated as part of the overall grizzly bear management program.

Alternatives to time-consuming, expensive, and controversial population estimations should be sought. Investigations should give due consideration to the record of mortality accruing to grizzly bears that are captured. Care should be taken not to allow further investigations to supercede obvious management actions that need no further study to implement.

Reintroductions of grizzly bears into suitable but unoccupied or sparsely occupied habitats should be made as quickly as possible. The Cabinet-Yaak area, Selway-Bitterroot Wilderness, San Juan Mountains in Colorado, and Gila Wilderness in New Mexico are areas where grizzly bear populations could possibly be reestablished.

The Grizzly Bear Recovery Plan (U.S. Fish and Wildl. Serv. 1982:29) provides strong guidance of what will be required to ensure the future of the grizzly bear:

"Goals and objectives of this recovery plan will be attained and funds expended contingent upon appropriations, priorities and budgetary constraints; however the most important ingredient will be the degree of commitment exhibited by individuals in supervisory capacities toward saving the bear .... Inadequate funding or lack of full cooperation by individuals, groups or agencies will only waste dollars and eventually increase the cost of recovery or increase the costs of tasks that will be necessary to prevent extinction at a later date. An all-out concerted effort, with federal and state agencies and a concerned public coordinating their resources, appears necessary to be assured that the future will include grizzly bears."

SUMMARY

The continental grizzly bear population, including the Alaska brown bear, is estimated at between 52,000 and 63,000, with the highest populations in Alaska. Causes of mortality vary considerably throughout the range, but legal hunting is a major cause in Alaska, western Canada, and the NCDE. Mortality in areas where no legal hunting occurs is by illegal kills; control actions involving bears that damage property, frequent campgrounds, are involved in human death or injury, or cause losses of livestock; and unintentional mortality due to handling by researchers and managers.

The effect of forest management on grizzly bear habitat varies regionally, depending upon the short- and long-term effects on forage sources, and upon how human access is changed. The greatest impact on grizzly populations from mineral exploration appears to be related to increased human use of occupied habitat.

Grizzly bears that prey upon ungulates may require special management when prey populations are reduced and demand for higher populations is great. Harvest management of these bear populations should include intensive monitoring of results and an awareness that low recruitment rates mean that recovery from unintentional heavy harvests will be slow.

Recovery of the grizzly bear in the GYE is the joint responsibility of many agencies, which must cooperate. Reduction in mortality, especially to adult females, is a first order of priority and may mean that further restrictions on camping, hiking, guides, outfitters, hunters, and livestock grazing will be needed. This situation represents a microcosm of conflicts that occur throughout the range of the grizzly. As encroachment into grizzly habitat increases, increased human understanding and tolerance of the grizzly is needed.

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