

BEAR-PEOPLE CONFLICTS: PROCEEDINGS OF A SYMPOSIUM ON MANAGEMENT STRATEGIES

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THE MANAGEMENT OF THE GRIZZLY BEAR ON PRIVATE LANDS: SOME PROBLEMS AND POSSIBLE SOLUTIONS

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Abstract: The grizzly bear (*Ursus arctos*) is a wide-ranging animal that is rarely tolerated in close proximity by humans. Much of the remaining low-elevation spring and fall habitat for this species is in private ownership in the grizzly's remaining range in the contiguous United States. The activities of humans in this habitat often involve the use or production of attractive food sources for bears such as livestock, fruit trees, bee yards, and garbage. The result is bear-human conflict, usually resulting in the death of bears. The majority of bear-human conflicts in recent years have been on these private lands. Major private land areas in grizzly range include the towns of Gardiner, West Yellowstone, and Cooke City, the Rocky Mountain Front, the west slope of the Mission Mountains, and the Bull River valley. Solutions to minimize conflicts range from the acquisition of such lands to local ordinances and increased public education. The response of local landowners is the determining factor in the success of management efforts, due to the limited statutory authority of state and federal agencies on private lands. The success of the overall grizzly bear recovery effort must include increased efforts to manage bears on private lands, as they have the potential to act as population sinks for the surrounding habitat that is in public ownership. Such continued population losses will negate the effectiveness of public land management for the grizzly bear.

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HISTORICAL PERSPECTIVE

The grizzly bear was once present throughout most of the western United States and south into central Mexico. In states such as California, the grizzly bear was common and occupied much of the habitat that is now prime agricultural land in the central valley and along the coast. With the arrival of white settlers in the American west, the range of the grizzly began to shrink. Most early settlers found the grizzly a dangerous competitor that was not to be tolerated. The belief that predators were bad and an impediment to successful settlement promoted the intensive eradication of the species.

Cattle and sheep were introduced in vast numbers throughout the American west and their use of habitat resulted in a dramatic change in the distribution and density of native vegetation, especially in riparian areas where vegetation was succulent year-round.

As David E. Brown (1985) points out in *The Grizzly in the Southwest*, the existence of the grizzly bear was impossible given the stocking levels that existed in the early 1900's. The livestock eliminated the bear foods. When bears began to prey on livestock because they had nothing else to eat, they were eliminated even more vigorously as human intolerance of bears increased. Stockmen viewed the grizzly as a real threat, and it was generally considered that commercial cattle and sheep production could not coexist with the grizzly bear.

Livestock associations and individual operators hired predator control personnel to kill all grizzly bears and wolves in their areas of operation.

Grizzly populations rapidly declined and became limited to remote areas. As human populations increased, livestock, farming, and townsite development were concentrated in the low-elevation areas and along rivers and streams that were primary zones of use and travel for bears. As low-elevation areas became unsuitable due to the presence of humans, and as bear populations in these areas were destroyed, the remaining grizzly bears were isolated in insular populations concentrated at higher elevations and in less valuable habitat on lands mostly in public ownership.

In the contiguous United States, the grizzly bear was eliminated from 99% of its historic range by about 1940 (Storer and Tevis 1955). The main strongholds of the bear were lands in public ownership, but even there the grizzly was intensively persecuted in the early 1900's. During the period from 1910 to 1940, the grizzly population was probably at its lowest point (Merriam 1922, Storer and Tevis 1955, Brown 1985). This was precipitated by a strong predator control philosophy, the intensive use of private agricultural lands, and the widespread grazing of public lands by the livestock industry, especially by domestic sheep. Much of the area that is now considered wilderness in Idaho, Montana, and Wyoming was intensively overgrazed by livestock during this period.

Even national parks were subject to intensive predator control. It was only because the grizzly bear was not thought of as an important predator on wild ungulates that it was not actively persecuted in Glacier and Yellowstone (Murie 1940, Schullery 1980). These areas remained important strongholds and refugia for the grizzly bear during this time, although Keating's (1986) analysis indicated that the population in Glacier National Park in the 1900's-1920's was perhaps less than 1/3 of the present population. In an area like the Selway-Bitterroot, which had no national park to serve as a refuge for grizzly bears, the species was essentially eliminated through intensive predator control efforts. The damming of the Clearwater River in 1927, which eliminated the major steelhead and salmon runs, was probably the final chapter for the Selway-Bitterroot grizzly bear.

THE PRESENT SITUATION

With the decline of the domestic sheep industry, the designation of wilderness areas, and the concern with wildlife management that began in the 1930's, grizzly bear populations probably increased and began to reoccupy much of the public land surrounding the refuges provided by Glacier and Yellowstone National Parks. However, no hard data are available on bear numbers. More recently, with careful state management and the protection of the grizzly under the Endangered Species Act, grizzly numbers have increased in the core areas and bears have reoccupied many of the areas on

the periphery of these ecosystems. These ecosystem edges are mostly private lands in places such as Yellowstone, the Northern Continental Divide, the Cabinet-Yaak, and the Selkirks. Many of these private lands contain seasonally important range as well as attractive food sources associated with humans such as garbage, domestic livestock, and human foods.

One of the major problems facing the conservation of the grizzly bear is the fact that its remaining range is separated into 6 isolated areas or ecosystems (U.S. Fish and Wildlife Service 1982) (Figure 1). These include the Yellowstone ecosystem, the Northern Continental Divide ecosystem, the Cabinet-Yaak ecosystem, the Selkirks ecosystem, the North Cascades ecosystem, and the Bitterroot ecosystem. Although the current range is not considered optimum for conservation of the species, there is little support to expand the range because of the prevailing public attitude of intolerance toward the grizzly bear. The grizzly may be unique among threatened and endangered species in the United States in that its range cannot be changed to enhance the probability for successful conservation and survival of the species.

Throughout the contiguous United States, 95% of occupied grizzly bear range is in federal and state ownership, or is owned by American Indian tribes as part of their reservations. The remaining 5% is in private ownership (U.S. Fish and Wildlife Service 1982) (Table 1).

The increase in human activity in grizzly bear range has resulted in increasing bear-human conflicts. Bears which come into contact with humans while seeking food are labelled "nuisance" or "problem" bears (Interagency Grizzly Bear Committee 1986). The majority of problem bear reports are from private lands, although the intensive use of national parks, national forests, and Indian reservations also results in bear-human conflicts.

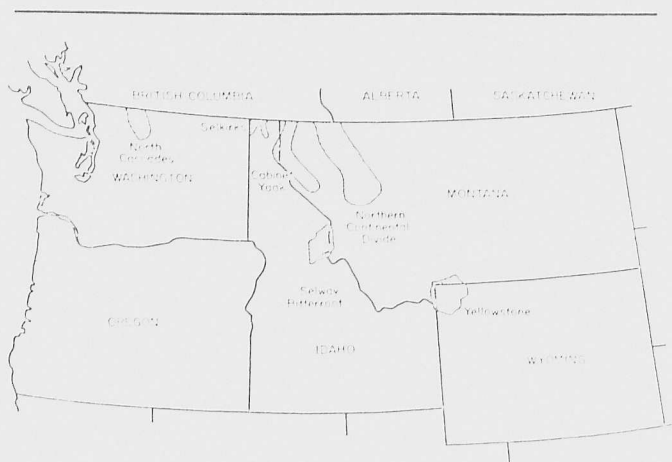


Figure 1. The range of the grizzly bear in the contiguous United States.

Table 1. Grizzly bear ecosystems in the contiguous United States.

Ecosystem	Total Area ^a	Private Land ^a	Percentage of Total
Yellowstone	23,828	220	1.0
NCDE ^b	24,864	1,890	8.0
Cabinet-Yaak	5,180	233	5.0
Selkirk	2,800	114	4.0
North Cascades	-----undetermined-----		
Bitterroot	-----undetermined-----		

^a Areas in sq. km.

^b Northern Continental Divide Ecosystem.

Figure 2. Percentage of privately owned grizzly habitat compared with percentage of nuisance bears reported on private land.

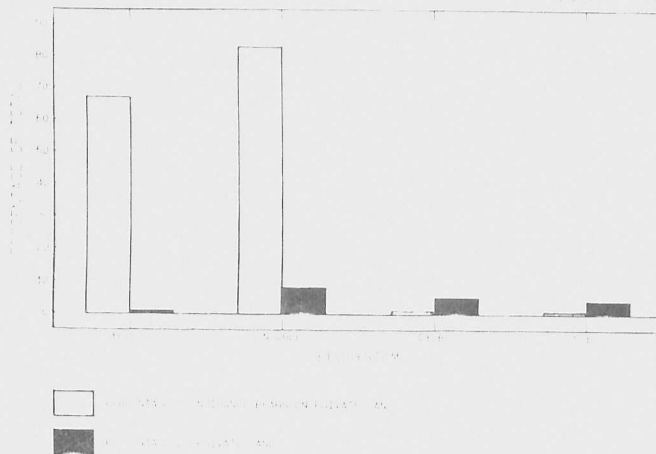


Figure 2. Percentage of privately owned grizzly habitat compared with percentage of nuisance bears reported on private land. YELGBE = Yellowstone; NCDGBE = Northern Continental Divide; CYGBE = Cabinet-Yaak; SGBE = Selkirks.

There is considerable disparity between the limited occurrence of private land in grizzly range and the high occurrence of problem bear complaints on these lands (Figure. 2). On public lands, efforts to reduce the availability of attractive food sources, such as human foods, have resulted in declining numbers of bear-human conflicts despite the fact that visitor use of public lands has increased (U.S. National Park Service 1987).

However, numbers of conflicts on private lands continue to be high and appear to be increasing. This suggests that management efforts have had limited success in controlling the levels of conflicts in these areas. In 1986, as an example, 22 (66%) of the 33 problem bears captured in the Yellowstone ecosystem initially were involved in conflicts on private lands (Table 2).

Six problem bears were captured in the Northern Continental Divide ecosystem in 1986, and 5 (84%) had their initial conflict on private land (Table 3). Considerably more bear-human conflicts occurred in the Northern Continental Divide ecosystem than are reflected by the small number of bears captured. Most of the problems occurred on the Rocky Mountain Front, a strip of ecotonal habitat between the mountains and the prairie that is mostly private land. In this area in 1986, grizzly bears on private land were involved in 7 incidents of beehive depredation, 5 depredations on cattle, 5 depredations on sheep, 5 conflicts related to human food, garbage, or carrion, and 5 people-bear encounters (M. Madel, Montana Dept. Fish, Wildlife, and Parks,

Table 2. Location of problem bear captures in the Yellowstone Ecosystem, 1986.

AREA	NUMBER	% OF TOTAL
Cooke City ^a	7	21
Gardiner ^a	7	21
West Yellowstone ^a	8	24
Bridger-Teton ^b	4	12
Gallatin ^b	1	3
Beaverhead ^b	1	3
Yellowstone ^c	5	16
TOTAL	33	

^a Private lands not subject to federal management.

^b National Forest.

^c National Park.

Table 3. Location of problem bear captures in the Northern Continental Divide Ecosystem, 1986.

AREA	Number	% OF TOTAL
Rocky Mountain Front ^a	3	50
Mission West Slope ^a	1	17
West Glacier ^b	1	17
Glacier National Park	1	17
TOTAL	6	

^a Private ranch land.

^b Private townsite.

pers. commun.). In contrast, in the 92% of this ecosystem in public ownership, there occurred only 1 problem bear complaint in 1986. It is likely that the bear populations are increasing in areas such as the Rocky Mountain Front, where long-time residents report bears in places where they have never seen bears before in their lifetime. This increasing population is probably due to the success of conservation efforts initiated since 1975, such as controlling grizzly mortality through hunting quotas, habitat protection, law enforcement, and public education. As populations increase, more animals are occupying private lands where conflict-causing attractants are more common.

Another possible reason for the increase in conflicts is increasing numbers of people in grizzly habitat. For example, on the west slope of the Mission Mountains, subdivision of private lands in bear habitat is resulting in increasing conflicts in this area of decreasing bear population.

REASONS FOR CONFLICTS

A major difference between human activities on public and private lands is the fact that people permanently reside on private land, whereas the closest things to permanent residence on public lands are activities such as outfitter camps or site developments in national parks. Site developments on private lands, especially townsites, have been the source of considerable numbers of bear-human conflicts.

In the Northern Continental Divide ecosystem, the majority of conflicts resulting in bear captures are related to farming and ranching activities and involve livestock depredations (Table 4). In 1986, 5 cattle and 10 domestic sheep were victims of grizzly depredations on the Rocky Mountain Front. In all of Montana in 1986, 23 domestic sheep were reported killed by grizzly bears. This compares to 14,600 sheep reported killed by coyotes in Montana in 1985 (Montana Crop and Livestock Reporting Service, pers. commun.). Of the 27 reported grizzly-human conflicts on private lands on the Rocky Mountain Front, 5 (18.5%) were directly related to bears eating garbage and in only 1 case was a bear captured in connection with garbage.

Overall, the losses of livestock to grizzly bears are minimal. There were no reported losses in Wyoming, Idaho, or Washington in 1986. At this time, losses of domestic livestock to grizzly bears appear to have a minimal impact on the economic viability of the industry, although the loss to individual operators could be significant in rare cases.

In the Yellowstone ecosystem, only 6% of the conflicts were due to livestock or farming or ranching operations (Table 4). In this ecosystem, all bear-human conflicts on private lands occurred in the 3 towns of Cooke City, Gardiner, and West Yellowstone. Bears were attracted to each of these towns for different reasons. In Gardiner, 7 bears were captured in association with domestic fruit trees. Apparently, the bears were venturing into town to feed on apples and other unharvested fruit on trees maintained for ornamental purposes. In West Yellowstone, 8 bears were captured in town feeding on unsecured garbage. It is possible that one or more people were feeding bears in the West Yellowstone area, thus conditioning these animals to human foods.

POSSIBLE SOLUTIONS

Local Support and Cooperation with Landowners

Local support is the key to proper management of private lands to minimize bear-human conflicts. Local attitudes often reflect the level of bear-human conflicts, and how these conflicts threaten the economic base of the area. For example, concerns about bears in West Yellowstone began to change after an adult female with cubs was removed from town in 1983. This bear had become food-conditioned and was a dangerous hazard in town. After repeatedly entering town, she was captured and separated from her young and shipped to a zoo. This incident resulted in a storm of local protest against management agencies, but it also provided a forum which allowed the local residents to realize the real reason for the removal of this bear - the availability of garbage throughout the town. Two other incidents have influenced public concern in West Yellowstone. In 1984, a person was killed by a garbage-conditioned grizzly bear close to town; and in 1985 there was an influx of tourists driving around town at night to see garbage-eating bears. The frequent interactions between bears and people in town were perceived as a safety hazard by the town leaders.

By contrast, in the towns of Gardiner and Cooke City, there has been no parallel evolution of local concern. In Cooke City, which is unincorporated, there is much disagreement about whether or not the bears should be fed. Some people believe the feeding of garbage to bears is essential to the survival of the species in the Yellowstone ecosystem. This perception, fostered by a few vocal individuals, and the fact that no one has yet been hurt by bears frequenting the town, are probably responsible for the lack of concern in this area. The

Table 4. Reasons for captures of problem grizzly bears in the Northern Continental Divide Ecosystem (NCDE) and Yellowstone Ecosystem, 1986.

Cause	-----NCDE-----		---Yellowstone---	
	Number	% of total	Number	% of Total
Domestic				
Livestock	1	20	2	6
Carrion ^a	2	40	7	21
Bee Hives	1	20	0	0
Garbage	1	20	17	52
Fruit Trees	0	0	7	21
Totals	5		33	

^a Use of carrion in close proximity to human residences was often cause for capture of bears to avoid potential conflicts.

town consciousness in Gardiner seems to be intermediate between that of Cooke City and West Yellowstone. Grizzly bears occur infrequently in town and bears are not considered a major issue at this time.

Ordinances and Laws

Management agencies have limited authority to require the elimination of attractive food sources on private lands. Experience on public lands, such as Yellowstone and Glacier National Parks, has shown that enforcement of regulations requiring proper food storage and garbage disposal can contribute to a decrease in bear-human conflicts, even where the potential for such conflicts is high (Schullery 1980). There is no statutory authority under either state or federal law requiring securing of food on private land, and it is up to local or municipal ordinances or zoning to require the securing of garbage in relation to bears. Where such ordinances are lacking, voluntary cooperation is necessary if conflicts are to be minimized.

The town of West Yellowstone enacted an ordinance in 1986 requiring proper garbage disposal, and it has been enforced several times. All future developments in the West Yellowstone area will be required to assure the proper disposal of garbage and the holding of garbage in bear-proof facilities prior to disposal.

Cooperative Efforts

In another effort to deal with the garbage-bear situation in West Yellowstone, a cooperative effort was joined by the local community; Gallatin County; the State of Montana; Montana Department of Fish, Wildlife and Parks; the U.S. Forest Service; the National Audubon Society; the Burlington Northern Foundation; and Waste Management, Inc. These groups achieved a cooperative agreement to secure the funds to replace the more than 140 garbage containers in West Yellowstone with bear-proof dumpsters. A local ordinance will require the use of these dumpsters once all the old containers are replaced. This situation is a model for cooperative local, state, and national efforts to minimize the availability of garbage to bears.

Public Education

Public education can also play a role in reducing bear-human conflicts. Intensive campaigns by the Forest Service and the town of West Yellowstone have attempted to promote a sense of cooperation among local residents regarding bear-proofing the town. In Cooke City, however, public relation efforts have not been so successful. The town is unincorporated and

thus has no leadership to focus the energy of the town on the bear problem. One person continues to defy the garbage control program by providing garbage for bears at his facility, and even has been known to advertise that bears can be seen in town.

New residents often move into grizzly bear habitat strictly for its aesthetic qualities. They rarely have the economic necessity to be involved in farming and ranching, but may come as "hobby farmers" keeping pigs, chickens, sheep, or bees to which bears are attracted. Many of these new residents are unfamiliar with bears and the precautions necessary to avoid conflicts with them. They express surprise and anger that bears might exist close to their new houses and are often the most vocal in demanding that bears be removed. The increase in numbers of people in bear habitat presents an ongoing public education problem, especially because the lack of ordinances requiring proper sanitation makes voluntary cooperation the only way conflicts will be minimized.

Land Acquisition

In some areas, small sections of private land exist in important grizzly bear habitat at low elevations. These areas are potentially important for the local grizzly population. Yet if they are subdivided and developed, they may be sites of continuing bear-human conflict and act as potential population sinks. Such small land-holdings exist in the Cabinet-Yaak and Northern Continental Divide ecosystems, primarily along rivers. Land acquisition to convert such areas to public ownership or conservation easements may be in the best interests of the grizzly bear. The identification and acquisition of such sites could promote the conservation of the species and should be a high priority.

Reimbursement Programs

Residents whose livelihood depends on ranching or honey production have limited tolerance for grizzly depredations which result in economic loss. A reimbursement program has been considered in Montana, and instituted in Alberta, to pay for livestock verified to be lost to grizzly bears. The Great Bear Foundation has recently instituted a limited program of this type in the Northern Continental Divide ecosystem in Montana, but there is no government-supported reimbursement in this area. Reimbursement programs have had varying degrees of success. In some cases, livestock owners may be willing to be reimbursed, yet they may still call for the elimination of the offending bear. Livestock associations in Montana have generally not been supportive of a reimbursement program while

those in Alberta seem to accept this approach. Because grizzly bears are opportunistic, it is likely that some bears that become livestock killers will continue to frequent private lands and become habitual problem bears. The long-term economic impact of such behaviour could be significant to the reimbursing agency should the bear not be removed.

In Spain and France, where small populations of brown bears exist in remote but heavily grazed areas, the government supports a reimbursement program and pays stockmen for any livestock lost to bears. In this situation where the bear populations are endangered, the bears are not removed or relocated. The reimbursement program is aimed at preventing the illegal killing of bears by stockowners. The Spanish and French authorities consider their programs a success, but they work in countries where the brown bear populations are in the range of 20 - 100 animals.

CONCLUSIONS AND MANAGEMENT IMPLICATIONS

The 5% of grizzly habitat which is private land presently experiences the majority of bear-human conflicts. Most conflicts result from unsecured attractive food sources such as garbage, carrion, human foods, and livestock. No state or federal laws require the securing of attractive food sources from bears on private lands, although some local communities such as West Yellowstone have initiated local ordinances. Without statutory limitations and enforcement, the elimination of bear-human conflicts on private lands depends on the cooperation of local residents. Public education, and perception of the costs and benefits of living in grizzly habitat, will determine the level of local cooperation. New residents in grizzly range are often least knowledgeable about bears, and may be less willing to cooperate to minimize conflicts.

The long-term survival of the grizzly bear may be affected by continuing bear-human conflicts on private lands. In places like the Yellowstone ecosystem, the 1% of the habitat in private ownership has the potential to act as a population sink if a high percentage of the population becomes conditioned to human foods.

Without successful resolution of the private land problem in Yellowstone, it is likely that continuing successful management efforts on public lands will be negated. Similar problems may exist in other grizzly bear ecosystems as management results in increasing grizzly populations.

Experience indicates that the sensitivities of local residents, and their willingness to make sacrifices in order to maintain a minimum level of conflict, are related to their perception of bears and the economic costs of having bears around. Public education and how the grizzly bear recovery effort is viewed will play a key role in determining public perception. The existence of key grizzly habitat in private ownership necessitates a cooperative effort between landowners and public management agencies. In some cases, such as on the periphery of existing range, management agencies must act to limit the numbers of bears in order to minimize conflicts and convince landowners that they share their concerns. The long-term survival of the grizzly will depend on a successful balance between conservation of the species and the maintenance of landowner support.

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