THE GRIZZLY BEAR RECOVERY PROGRAM: CURRENT STATUS AND FUTURE CONSIDERATIONS

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Abstract: A program to recover the threatened grizzly bear (*Ursus arctos horribilis*) has been underway in the states of Wyoming, Montana, Idaho, and Washington since 1981. This program involves implementing a recovery plan through interagency cooperation to limit mortality, increase public awareness, manage habitat to assure the security and food necessary for survival, manage bear–human conflicts, and perform necessary research. Progress to date has included development of a coordinated management effort that has improved the status of bears and increased public involvement in bear conservation. Cooperative efforts of this type have the greatest chance of success where all parties approach the complex decisions required for grizzly bear recovery with a willingness to work together. Public support is critical to success of the program. A list of research and management needs is suggested.

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Key words: endangered species, grizzly bear, management, *Ursus arctos horribilis*.

The grizzly bear was once found throughout much of western North America from Canada south into Mexico (Fig. 1). There may have been more than 50,000 grizzly bears in the western U.S. before the arrival of Europeans (U.S. Fish and Wildlife Service [USFWS] 1993). Populations declined dramatically in the early part of this century, and the grizzly was listed as a threatened species under the Endangered Species Act (ESA; 16 U.S.C. 1531–1544) in 1975. This listing recognized the desperate state of grizzly bears south of Canada and organized a recovery program to address the needs of the species if it was to survive in the western U.S. Present grizzly range south of Canada is now limited to 5 areas in Wyoming, Montana, Idaho, and Washington. A sixth area with suitable habitat but no bears, the Bitterroot Mountains in Idaho, is planned for grizzly bear reestablishment (USFWS 1993).

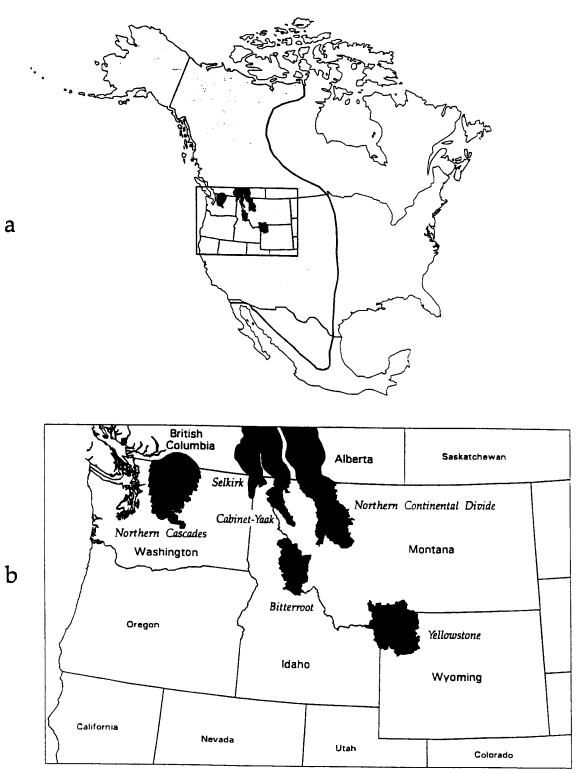

Fig. 1. The historic (outline) and present (black) range of the grizzly bear in North America (a) and the present range in the conterminous United States (b), 1996.

The grizzly bear recovery program has been in place in the United States since 1981. The objective of the program is to establish populations of grizzly bears in 6 areas where grizzlies existed or were thought to exist in 1975 when the bear was listed as threatened. The program involves a cooperative effort between states, tribal governments, U.S. federal agencies, and Canadian authorities to implement measures that are intended to increase populations (USFWS 1993), manage habitat (USFS 1986, USFWS 1993), and increase public awareness and support for bear conservation (USFWS 1993).

ISSUES ABOUT GRIZZLY BEAR RECOVERY

Recovery Definition and Measurement

Under the ESA, any proposal to change the status of a listed population must address the 5 factors in Section 4(a)(1): (1) the present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) the inadequacy of existing regulatory mechanisms; and (5) other natural or man-made factors affecting its continued existence. These factors must be addressed in any status

change for listing or delisting. When the grizzly bear was listed in 1975, there were threats to habitat, excessive human-induced mortality, and regulatory mechanisms were inadequate to assure that habitat and population management could sustain a population. Any proposal to recover or delist a grizzly population needs to address each factor used to list the species. Thus, if a grizzly population is proposed for status change, the U.S. Fish and Wildlife Service must demonstrate the following: habitat can sustain a viable population; mortality is within the limits necessary for population stability; and adequate regulatory mechanisms are in place to assure that habitats and populations will be monitored and managed to sustain recovery. Since there are no documented connections or movement between any of the populations in Wyoming, Montana, Idaho, and Washington, they are distinct populations, and the listed status of each population must be changed separately.

Population Viability

A viable population is one that has long-term prospects for survival, and population size is a major factor in the likelihood of survival (Boyce 1992, Caughley 1994). The number of animals required for survival can be estimated with a population viability analysis (PVA; Simberloff 1988; Boyce 1992, 1993, 1995). However, there is no definitive number of animals derived from a PVA as viable because of the many systematic and stochastic factors involved in a population's survival. An adaptive management (Walters 1986) approach that monitors population parameters and responds to these data with appropriate management efforts (Walters and Holling 1990) is a strategy that can increase the possibility of long-term survival and thus produce a viable population (Boyce 1993, 1995). For example, a large population subject to excessive exploitation or habitat loss is no more viable than an small population under careful and adaptive management.

I believe a viable population is one that can be maintained into the future with minimal manipulation by management authorities and has adequate habitat to support it. However, a viable population is not a population that is left alone as if humans do not exist. To maintain a population of grizzly bears or any other large carnivore given the human presence that exists in the Rocky Mountains, they must be managed. Management means that human-caused mortality is carefully controlled and systems are in place to monitor mortality, reproduction, population trend, distribution, habitat, habitat effectiveness, and quantity and availability of major foods. Management also means that bear–human conflicts are minimized through public education, management of attractants, and removal of nuisance animals when necessary. Public education and information efforts are ongoing to maintain public support for bears and bear conservation, and an organizational structure is in place to maintain this management. A management program of this type is an adaptive program that responds to monitoring results by changing management to maintain a healthy and well-distributed population. A viable grizzly bear population maintains natural feeding, reproduction, a stable or increasing population that occupies the available habitat, and has adequate habitat and habitat security. This definition of viability is based on the implicit assumption that management is acceptable as opposed to benign neglect. It also assumes that extinction risk to the population is minimal if monitoring systems are adequate, public support exists, and management is responsive and adaptive.

Connectivity between Populations

Human activities are the primary factors in reducing and fragmenting grizzly bear habitat (Servheen 1990, USFWS 1993). When the grizzly was listed as threatened in 1975, it was already separated into 5 geographically separate populations. Human activities of varying magnitude existed between all these populations. In the revised *Grizzly Bear Recovery Plan* in 1993, the USFWS detailed a recovery task to analyze areas between existing populations using a Geographic Information System (GIS) called the linkage zone prediction model (Servheen and Sandstrom 1993). This analysis is aimed at quantifying the type and level of human activities between these populations. The purpose is to understand if populations can be reconnected given the level of human activity in each area. This analysis is ongoing. If opportunities for reconnection exist, the USFWS and other agencies will implement necessary management actions to enhance opportunities for reconnection on public lands.

In addition, the USFWS is working with private landowners in linkage areas to promote locally developed land management plans and recommendations (i.e., Pelletier and Servheen 1995). These plans are intended to help maintain population linkages across private lands between areas of occupied habitat. In most cases, development of private lands is the major threat to such linkage areas (Servheen and Sandstrom 1993). This linkage question must be placed in perspective, however. Ideally, the USFWS would like these populations to be linked, but we cannot make grizzly bears move between areas. In fact, the data show that bears do not disperse between recovery areas at all. Since 1975, state, federal, and tribal researchers have radiocollared and monitored 500 griz-

zly bears. Not a single bear has ever moved between any of the 6 recovery areas (C. Servheen, unpubl. data). Thus, while we may be able to identify opportunities for movement using the linkage zone prediction model and we may be able to maintain these opportunities, bears may never use these opportunities.

There has been concern about the genetics of isolated populations of grizzly bears (Harris 1985, Allendorf and Servheen 1986, Harris and Allendorf 1989, Allendorf et al. 1991, USFWS 1993). The revised *Recovery Plan* even recommends that bears regularly be moved into Yellowstone to limit loss of genetic diversity. However, recent work (Waits et al. 1998) clearly shows that the genetic variation in Yellowstone today is within the range of variation seen in most other North American grizzly populations. Thus, there may be no compelling genetic need in the short-term to reconnect these populations or move bears into Yellowstone for genetic purposes every 10 years.

Public Support for Recovery

The basic recovery program involves implementing conservation actions based on biological data; these actions have received wide public and political support. Implementation of conservation actions for the grizzly bear has received wide public and political support. We know what is biologically necessary to conserve the grizzly bear and its habitat. We are not limited so much by biological knowledge but by public and political understanding and acceptance of necessary conservation actions. Recovery actions must proceed with an understanding of biopolitics (i.e., the relationship between social support and the biological science necessary to conserve a species).

I believe successful grizzly bear conservation must include, in addition to biological knowledge, an understanding of public perceptions about bears and bear conservation and the origin of these beliefs. Much public resistance to grizzly bear conservation is based on personnel beliefs of economic, physical, and regulatory threats posed by conserving the bear. Economic threats come from belief that grizzly bear conservation will interfere with activities important to communities such as timber harvest, oil and gas exploration and development, mining, and commercial recreation (Servheen et al. 1995). Physical threats are based on fear of bears and the potential for interaction between bears and resource users such as hikers, berry pickers, hunters, backcountry horsemen, and wood cutters (Herrero 1985, Servheen et al. 1995). The fear of regulatory threats is based on real or imagined limitations to human activities such as resource extraction, hunting, access to public lands, and recreation. Today, the primary fear that local publics have about grizzly bears is the threat of federal regulatory action and court actions brought by groups interested in further restrictions on public lands in the name of grizzly bear recovery. These threats are interrelated because regulations and court actions may affect local economies and access to public lands.

To maximize progress on grizzly conservation, recovery efforts must realistically address these 3 threats that cause certain public and political forces to oppose grizzly bears and bear conservation measures. Without careful public information and outreach to provide the public with accurate information on these potential threats, they will continue to inhibit necessary conservation programs. Uncompromising positions on what is necessary for grizzly conservation will increase public concerns and thereby decrease chances of conservation. Uncompromising positions include all extremes, from elimination of all bears to elimination of all human activities so that bears can reoccupy vast areas of their former range. The greatest hope for the grizzly bear's future is on the middle ground between the extremes. Given that humans now occupy much of the bear's habitat, our management must ensure that the biological necessities for grizzly recovery are met to maintain available range and viable populations while not unnecessarily excluding opportunities for compatible human uses.

Agencies involved in grizzly recovery have found that dealing with those opposing grizzly recovery is best accomplished by discussing interests rather than positions. Interest-based discussions attempt to address the reasons behind people's opposition to an issue. People's interests are often quite different from the positions expressed at public meetings or in letters voicing concerns about an issue. Interest-based discussions have a greater chance of reaching common understanding than position-based discussions. For example, someone may have a position against grizzly bear recovery based on an interest in maintaining resource-based jobs in the area. Since grizzly bear recovery does not necessarily threaten resource-based jobs, discussion of this person's interest can allay this concern. It is with such approaches to contentious issues that the grizzly bear recovery program is making some of its greatest gains (Fischer and Roy 1998).

The best way to improve public support is to give local people some ownership in the issue of conserving and maintaining grizzly bears. This must include identifying economic and quality of life benefits for people to encourage maintaining grizzly bears and grizzly habitats. We have gained public support for maintaining

grizzly habitats in linkage zones in the Swan Valley, Montana, by clearly showing that basic needs of bears such as open space, less development, visual cover, and low road density are values that local people desire for their quality of life. In this way, local residents see benefits to themselves by maintaining grizzly habitat.

Reliance on regulatory authority and litigation to restrict public access and resource extraction on public lands usually leads to polarization and builds local resentment against bears. The solution to building public support is to focus on local communities and their interests and to address the threats they perceive about bears. In most cases local people believe that threats are not coming from the bears themselves, but from the lawyers, litigants, and others who use the grizzly to achieve results on other issues such as road access or timber harvest. This litigious approach eliminates involvement of local communities and promotes antagonism rather than cooperation. Public support will be key to recovery. If people perceive that agencies will balance the needs of people with the needs of bears, they will be more likely to support recovery and may even allow bear range to expand (Fischer and Roy 1998, Peek 1998). If, on the other hand, people perceive that with grizzly bears comes litigation and inflexible rules and regulations, then they will not support population and range increases.

Dialogue among Scientists, Managers, and Conservation Groups

This dialogue is essential to progress. The first step is that all sides approach this issue with the understanding that no one person or group has the solution. There are no easy answers. An extreme protectionist approach to maximize bear numbers and habitat protection may sound good and look scientifically sound since it has the lowest theoretical risk to bear. However, if it has no possibility of acceptance or adoption and instead inflames local communities and political interests against bear recovery, it will not succeed. In the past, some groups have approached grizzly bear conservation by making statements about what would be required for recovery in terms of specific numbers of bears (Metzgar and Bader 1992, Shaffer 1992). Such statements were based on questionable theory (Boyce 1992, 1993, 1995) and were delivered without determining how much habitat is actually available to support this theoretical number of bears. Such claims, that recovery would require more habitat than was available, made recovery unattainable and therefore questionable in people's minds. Such statements did not benefit grizzly recovery.

A positive approach, on the other hand, involves mutual efforts toward problem solving with individuals and groups using their various skills to help achieve recovery. There has been excellent cooperation and involvement throughout the recovery program with scientists from many universities and agencies in the western states, Alaska, and Canada. Such involvement has greatly aided the recovery effort and will continue in the future. Perhaps the best way to ensure continued dialogue with all interested parties is to view issues from a position of interests rather than from positions. If all are truly interested in grizzly bear recovery, then there should be room for mutual involvement and discussion. If, however, other interests are really the basis for certain positions, then there will likely be little room for discussion.

Key Research and Management Needs

Key research needs (not necessarily in priority) include: (1) testing the linkage zone prediction model's ability to predict the distribution of bears in relation to human activities and the differential mortality related to occupancy around human use areas versus more remote areas; refining, if necessary, the assigned influence zones and scoring system based on this test; (2) validating the cumulative effects model (CEM; Weaver et al. 1986, USFS 1990) or an equivalent system; (3) documenting effects of paved, high-speed highways on bear habitat use and movements and developing design guidelines to minimize detrimental effects of highways on bears and other large carnivores; (4) documenting infection rate, distribution, and a possible cure for white-pine blister rust (*Cronartium ribicola*) on whitebark pine (*Pinus albicaulis)* in the Yellowstone ecosystem because whitebark pine cones are a major grizzly bear food; and (5) improving comparative monitoring systems to assess productivity of major foods within and between all ecosystems.

Management needs include: (1) completion and regular updating of the CEM databases; (2) application of CEM in all recovery areas; (3) monitoring female survivorship and reproductive rates in the Northern Continental Divide Ecosystem, Cabinet–Yaak, and Selkirk recovery areas to calculate population rate of change with a confidence interval; (4) reintroducing grizzly bears into the Bitterroot recovery area; (5) placing additional bears into the Cabinet–Yaak recovery area; (6) completion of the access management task force recommendations for all recovery areas to assure habitat security and adequate road management; (7) initiating public outreach and a process to augment the population in the North Cascades recovery area; (8) improving public relations, including information and education involving local people in ownership of recovery,

and targeting special groups such as backcountry users and new residents in spring habitats for increased outreach efforts; (9) completing the linkage zone analysis between all recovery areas and implementing necessary management actions in areas where linkage opportunities exist; (10) assisting in the development of local land management recommendations by private landowners in grizzly habitat so people can learn to live in such areas with limited effect on bears; (11) establishing improved cross-border management planning with Canada; and (12) improving easement actions to assure maintenance of grizzly habitat on private lands subject to development.

CONCLUSIONS

So where does the future lie for the grizzly, and how do we ensure that populations that exist today can continue to exist? The primary factor determining the future of the grizzly is public acceptance and support for actions necessary to secure habitats and maintain populations. Public support has been and will continue to be determined by how threatened the public, primarily the local public, is by conservation actions. We need to build coalitions with local publics so that they assume some ownership of the recovery of the grizzly bear and they see a link between survival of the grizzly bear and their quality of life. Actions that increase fear of bears and make bear conservation more threatening will make it more difficult to convince the public that the bear is not to be feared. Building coalitions between local citizens and management agencies to develop acceptable and sound conservation actions is the best way to increase support for bears. Such coalitions should be based on biological facts, adaptive management, and mutual willingness to understand interests of all parties concerned. Biological facts alone will not maintain the grizzly bear. The integration of biology into a social and political fabric necessary to implement and maintain management has the greatest chance of success.

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