Montana Fish, Wildlife & Parks

GRIZZLY BEAR MANAGEMENT PLAN FOR WESTERN MONTANA

DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT 2006-2016

With input from the
Montana Grizzly Bear Working Groups
and other interested parties

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With input from the
Montana Grizzly Bear Working Groups
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US Forest Service
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1. INTRODUCTION

Vision Statement

Montana Department of Fish, Wildlife and Parks (FWP) envisions a future with a secure, recovered population of grizzly bears in western Montana that includes core populations of 500 or more grizzly bears in the Northern Continental Divide area and 90-125 grizzly bears in the Cabinet-Yaak area. We envision grizzly bear management programs throughout western Montana that are similar to other resident species and which maintain effective biological connections between these two core areas and linkage of these areas with populations to the north in Canada and to potential habitat in the Bitterroot area to the south. It is our vision that one day the populations in western Montana will also interact with the existing population in the Greater Yellowstone Area (GYA).

Background to State Plan

The U.S. Fish and Wildlife Service (USFWS), in cooperation with FWP, the U.S. Forest Service (USFS), National Parks Service (NPS), Bureau of Land Management (BLM), Blackfeet Tribe and Confederated Salish and Kootenai tribes, currently manages grizzly bears in Montana as "threatened" under authority of the Endangered Species Act. This cooperative management is under the Interagency Grizzly Bear Committee (IGBC) within which all agencies and tribes are partners. FWP is preparing this grizzly bear management plan and draft programmatic environmental impact statement (DPEIS) as a way of expressing the State's ongoing commitment to ensuring the continued expansion and recovery of the species. Moreover, FWP recognizes that successful recovery of grizzly bears requires an integrated approach that balances and incorporates the biological requirements of the bear within a broader social, economic and political framework.

Within western Montana, grizzly bear populations and their habitats are managed under the Grizzly Bear Recovery Plan utilizing a management approach that identifies recovery zones and adjacent areas where occupancy by grizzly bears is anticipated and biologically and socially acceptable. This document deals with the State's programs for managing grizzly bears throughout the region over the next 10 years. If approved by the FWP Director, the department will begin implementing this plan in accordance with and in cooperation with the Grizzly Bear Recovery Plan, to the extent possible under constraints of the federal Endangered Species Act until grizzlies are delisted.

FWP recognizes that a broader Conservation Strategy or post delisting management plan will have to be developed for each defined Distinct Population Segment (DPS) defined by the USFWS as per existing regulations, to identify and document specific requirements, including population and habitat standards, which the USFWS will need to meet recovery objectives. Each Conservation Strategy will be jointly developed with other agencies and additional public scrutiny. In order to meet requirements for delisting, all agencies involved will need to sign a Conservation Strategy Memorandum of Understanding (MOU).

Process for Plan Development

FWP developed this plan and DPEIS through a series of meetings with affected agencies, governments, interested persons, and groups. FWP initiated the scoping processes with discussion of potential issues and alternative actions after completion of the management plan in southwestern Montana in 2002. Following these preliminary efforts, FWP held a series of 11 public scoping meetings in western Montana

during May and June 2004 (Great Falls, Kalispell, Missoula, Choteau, Eureka, Hamilton, Helena, Libby, Lincoln, Seeley Lake, and Thompson Falls). FWP solicited written comments throughout 2004 via news releases, press interviews, and personal contacts. During these meetings, FWP sought to identify issues likely to involve significant impacts and those issues not likely to involve significant impacts, as well as alternatives for grizzly bear management.

To further develop issues and ideas for possible alternatives, FWP held a series of facilitated meetings in Missoula, Kalispell, and Great Falls with interested groups and individuals during September 2004. FWP invited the participation of those individuals and groups that had expressed interest in additional participation as well as other affected agencies. Following these meetings, a draft management plan was produced and resubmitted to a broader group of interested parties including those who attended the September 2004 meetings. Additional facilitated meetings were held in these same cities during September 2005 to review and discuss approaches presented in the preliminary draft plan with the purpose of fine-tuning the draft. All of the meetings were open to the public.

Montana Fish, Wildlife and Parks Goals for the Grizzly Bear

FWP has statewide goals for wildlife resources. More specifically, this plan deals with grizzly bears in western Montana as an approved plan is in place for southwestern Montana. The goals of this plan are:

1. Statewide Goal - To provide the people of Montana and visitors with optimum outdoor recreational opportunities emphasizing the tangible and intangible values of wildlife and natural and cultural resources of aesthetic, scenic, historic, scientific, and archaeological significance in a manner that:
    a. Is consistent with the capabilities and requirements of the resources
    b. Recognizes present and future human needs and desires, and
    c. Ensures maintenance and enhancement of the quality of the environment.

2. Wildlife Program Goal - To protect, perpetuate, enhance, and regulate the wise use of wildlife resources for public benefit now and in the future.

3. Grizzly Bear Management Goal - To manage for a recovered grizzly bear population in western Montana and to provide for a continuing expansion of that population into areas that are biologically suitable and socially acceptable. This should allow FWP to achieve and maintain population levels that support managing the bear as a game animal along with other species of native wildlife and provide some regulated hunting when and where appropriate.

These goals will be achieved by addressing the following issues identified early in the planning process: human safety and education, habitat and population monitoring and management, future distribution, motorized and non-motorized trails programs, livestock conflicts, property damage, conflict guidelines, hunting opportunities, enforcement concerns, and funding. The success of grizzly bear management in Montana will be contingent upon FWPs ability to address these issues in a way that builds social support for grizzlies.

President Theodore Roosevelt stated: "The nation behaves well if it treats the natural resources as assets which it must turn over to the next generation increased and not impaired in value". It is FWPs hope that this plan will allow the next generation of Montanans to manage a grizzly bear population that has increased in both numbers and distribution in western Montana.

Development of this plan is further guided by utilizing the success of the Yellowstone Recovery effort and management plan for southwestern Montana. Among the key recommendations in that plan was support for continued joint federal and state management of the proposed Primary Conservation Area (PCA) as a secure "core" area for grizzly bears within the Yellowstone Ecosystem. The southwestern Montana plan also recommended that the state develop a management plan for the area outside the PCA to:

1. Ensure the long-term viability of bears and avoid the need to re-list the species under the Endangered Species Act.
2. Support expansion of grizzly bears beyond the PCA in areas that are biologically suitable and socially acceptable.
3. Manage the grizzly bear as a game animal including allowing regulated hunting, when and where appropriate.

A similar course is being recommended for western Montana. Thus, Montana's approach to managing grizzly bears will be outlined in two region specific documents. In the future, however, FWP intends to incorporate both the southwestern and western grizzly bear management plans into one inclusive plan. This will provide a document that addresses grizzly bear management across the entire western portion of the State.

Purpose and Need

Grizzly bear management in Montana is being addressed within the framework of the Montana Environmental Policy Act (MEPA) and its regulations. MEPA is patterned after the National Environmental Policy Act (NEPA) of 1969, and throughout the process of plan development FWP has attempted to follow the intent of this national statute.

As this grizzly bear program has the potential to impact the human environment, in keeping with MEPA guidelines, FWP has prepared a programmatic review that addresses the impacts of the proposed actions. Throughout the process, FWP also evaluated the significance of impacts as a result of these proposed actions as required in Section 12.2.431. of the Administrative Rules of Montana. Potential impacts could be adverse, beneficial or both, in terms of their impact on the quality of human environment. These impacts were addressed by following established guidelines, which require us to address such factors as the severity, duration, geographic extent and frequency of occurrence of any impacts. In addition, the plan addresses the probabilities that impacts will occur and any affects of such impacts on economic growth in Montana. FWP also addressed the cumulative nature of these impacts and the importance of this program on the state and society. It is recognized that these programs are a compilation of department efforts as well as other state, local and federal programs and their statutory requirements. As such, some of the impacts are not directly attributable to department programs; however, they are included in the document for completeness.

This plan and draft programmatic impact statement deals directly with the portion of western Montana that encompasses the Northern Continental Divide Ecosystem (NCDE), the Cabinet-Yaak Ecosystem (CYE), the Bitterroot Ecosystem and adjacent lands in western Montana. The proposed action of this document is to create and adapt a management program for the entire area of western and northwestern Montana.

The need for this western plan was precipitated by changes in bear management in Montana during the 1980-90s, resulting in increasing numbers and expanding distribution of grizzly bears in western Montana. Current approaches to land management, wildlife management, and recreation within the NCDE appear to be providing the conditions needed to establish a population of bears outside the recovery zone. Recovery to date in the Cabinet-Yaak area has however been slow and tenuous at best, and recovery has yet to begin in the Bitterroot ecosystem. In principle, it is FWPs objective to maintain existing renewable resource management and recreational use where possible and to develop a process whereby FWP, working with local publics, can respond to demonstrated problems with appropriate management changes. By maintaining existing uses, which allow people to continue their lifestyles, economies, and feelings of well being, this approach builds support and increases tolerance for an expanding grizzly bear population.

Along these same lines, the Governors' Roundtable in southwestern Montana produced a recommendation to allow grizzly bears to inhabit areas that are "biologically suitable and socially acceptable." The level of social acceptance of grizzlies in historic habitat varies, depending on how issues are approached, and how much faith people have in management being responsible and responsive. To maximize the area of Montana that is "socially acceptable" grizzly bear range, the state planning and management effort for western Montana will employ adaptive management strategies to develop innovative, on-the-ground management. By demonstrating that grizzly bear conservation can be integrated with broader social goals, public faith in management can be enhanced and human tolerance of grizzly bears increased. Such an approach has already demonstrated success in northwestern Montana along the Rocky Mountain Front, where bear populations have increased and bears have reoccupied habitats from which they had been absent for decades. By employing such an approach, this document provides a strategy for initiating, implementing, and learning from a set of localized efforts.

This process will entail developing a set of strategies on a relatively small scale of Ranger Districts, Conservation Districts, valleys or watersheds. FWP, other agencies, local citizens, and interest organizations would cooperatively design local strategies tailored to local conditions. These strategies would include monitoring provisions that would require management adaptations as conditions dictate or change. Ultimately, all parties would collectively learn from these localized efforts. This should result in developing a basis of knowledge for replicating efforts elsewhere and incorporating successes in the statewide management of the grizzly bear and other species. The underlying basis for this approach is that as bears reoccupy areas from which they have been absent for decades, there are many issues that can't be anticipated or predicted with accuracy. Consequently, this approach allows FWP to adjust the program as necessary.

Localized efforts have many advantages. For example:

- They tend to generate productive, focused solutions.
- They provide low-conflict settings for trying out innovative ideas.
- They have tremendous local importance that can help increase political support (e.g. showing that ranchers can and do get along with grizzlies builds support for the agricultural community and for the benefits they provide to the rest of society).

An adaptive management approach is flexible and iterative in nature, and produces tangible results. In fact, innovative grizzly conservation efforts are already underway in Montana and we can make use of the lessons already available. This approach will be described in more detail in the local management

section and will include annual reviews. Ultimately this plan and approach will be re-evaluated in 10 years to provide for a complete review of its successes and/or failures.

History of Bears and Bear Biology in Western Montana

The Eurasian brown bear and the North American grizzly are considered the same species (*Ursus arctos*). Current theory holds that this species developed its large size, aggressive temperament, flexible feeding habits, and adaptive nature in response to habitats created by intermittent glaciation. It is believed that ancestors of the grizzly bear migrated to North America from Siberia across a land bridge at the Bering Strait at least 50,000 years ago. As the continental ice sheet receded about 10,000 years ago, the species began to work its way south over post glacial North America.

The grizzly bear originally inhabited a variety of habitats from the Great Plains to mountainous areas throughout western North America, from central Mexico to the Arctic Ocean. European explorers encountered grizzlies throughout most of the American West. It is not known exactly how many grizzlies lived in the U.S. before 1700, but based on historical sightings and modern-day densities, it is estimated that around 50,000-100,000 bears lived in parts of 17 states.

Prior to 1800, grizzly bears were undoubtedly common in western Montana. With newly acquired access to firearms by indigenous people and westward expansion of settlers, bears began to be impacted. With no mechanisms to provide protection or management, almost without exception, bear numbers declined where human and bear came together for any length of time. The decline of the grizzly bear took less than 60 years, from the end of the trapping era in 1840 to the turn of the century. The decline was due to a number of factors including: a reduction of prey because of market hunting associated with gold exploration and mining; subsistence hunting associated with gold exploration and mining; construction of railroads, homesteading, and predator control; and loss of habitat related to ranching, farming, and human settlement. Much of the killing was based on the feeling, and in some cases fact, that the grizzly bear posed a threat to people and livestock.

By the 1870s, grizzly bears had disappeared from West Coast beaches and by the 1880s they had been extirpated from prairie river bottoms. In fact, by the turn of the century, they had disappeared from most broad, open mountain valleys. Fifteen years later, most foothill country lacked grizzlies.

Grizzlies were never eliminated from Montana, but their numbers probably reached their lowest levels in the 1920s. At that time, changes were made out of concern for the future of the species including designating grizzlies a "game animal" in 1923, the first such designation of the species in the lower 48 states. This change, along with the early prohibitions on the use of dogs to hunt bears, outlawing baiting (both in 1921) and closing seasons, allowed grizzlies to survive in portions of western Montana.

Since that time, the degree of protection and the sophistication of management practices have grown steadily. In the 1940s, the importance of protecting fish and wildlife habitat began to emerge as a key public issue in wildlife management. Through all of the previous years, wildlife conservation was the goal, and was sought through the restriction and regulation of hunters and anglers. Although partially effective, regulations and laws failed to address a more fundamental issue: the protection of fish and wildlife habitat.

Early concern by the people of Montana allowed the grizzly bear to survive when it was lost in many other places and is evidenced in the fact that the state contains all or portions of four of the six areas in the

lower 48 states identified by the USFWS plan for grizzly recovery (Figure 1). Habitat protection under state authority began with winter game range acquisitions in the 1940s and stream preservation in the early 1960s. Generally, concern for and protection of habitat appeared in state laws dealing with controlling natural resource development. These laws usually addressed specific resource issues such as surface mining and siting of major industrial facilities. An exception to this specific approach was the Montana Environmental Policy Act (MEPA) adopted in 1971. Montana MEPA law was mirrored in large part on the National Environmental Policy Act (NEPA) adopted by Congress in 1969. The Montana Fish and Game Commission (MFGC), today known as the Montana Fish, Wildlife and Parks Commission (MFWPC), adopted rules for implementing MEPA. These rules provide for the preparation and distribution of an environmental analysis evaluating a series of actions, programs or policies that affect the quality of the human environment.

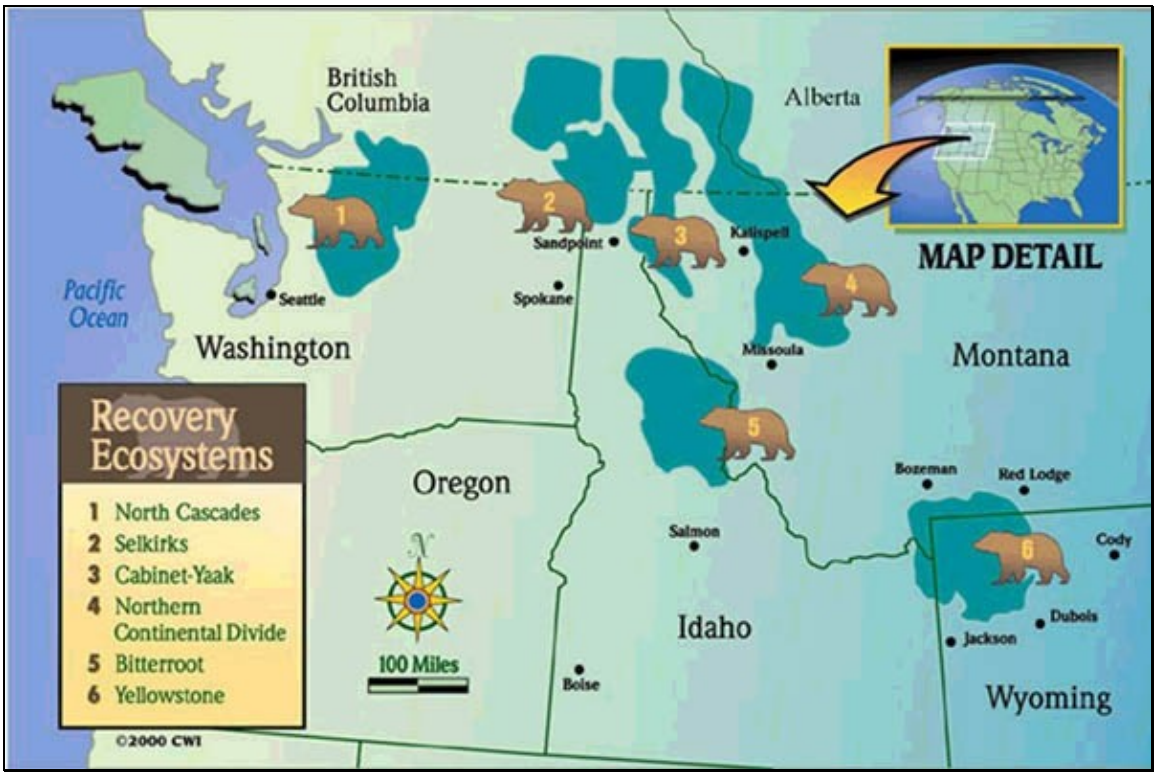

Figure 1. Grizzly bear recovery zones in the lower 48 states.

Montana's concern continues today as demonstrated by the fact that the species is Montana's "State Animal," and there is specific policy directing management of the species. Grizzly bear populations are currently increasing, and expanding, in the Yellowstone and portions of the Northern Continental Divide area. A small population of grizzly bears in the Cabinet-Yaak area of Montana appears to have increased from the 1970s but may be declining at present. While there are currently no documented grizzlies in the Bitterroot ecosystem, individual animals have been sighted in the vicinity.

It is important to recognize that the presence of a viable grizzly bear population is very important to many people in Montana as well as nationally. This species provides one example of why Montana is such a special place to live, work, and recreate. Many people travel to Montana with the hope of seeing a bear and the stories of such encounters are retold many times. There are also clear economic benefits

associated with tourism, recreation, and potential harvest from the presence of grizzlies. While FWP is fully aware that there are also costs and potential risks associated with the presence of such a species, this plan should allow FWP to manage these in a way that meets the needs of the public. In light of this, the State of Montana has adopted the following policy for this species.

Montana Fish, Wildlife and Parks Commission Policy

The Montana Fish, Wildlife & Parks Commission (MFWPC) is the policy making arm of Montana's fish, wildlife, and parks programs. Section 87-1-301(1), Montana Codes Annotated (MCA) requires the Commission to "set policies for the protection, preservation, and propagation of the wildlife, fish, game, furbearers, waterfowl, non-game species, and endangered species of the state for the fulfillment of all other responsibilities of FWP as provided by law."

The legislature has given specific policy direction to the Commission on the issue of grizzly bears. Section 87-5-301, MCA, states "It is hereby declared the policy of the State of Montana to protect, conserve, and manage grizzly bears as a rare species of Montana wildlife." Section 87-5-302 describes the FWP Commission's power regarding grizzly bears.

In addition, within this legal framework, the MFWPC developed a grizzly bear policy in Section 12.9.103, ARM (Appendix A). This policy addresses the need to protect grizzly bear habitat, the need to pursue grizzly bear research, the role of regulated hunting in grizzly bear management, depredations and the appropriate FWP response to depredations, and requires compliance with federal regulations relating to grizzly bears. It is within this framework, and that described by the Endangered Species Act (16 U.S.C. Sec. 1531, et seq.), that specific FWP goals for the grizzly bear were developed. Because of high mortality rates resulting from sudden closure of open dumps in Yellowstone National Park, concern over the status of the grizzly population in the Greater Yellowstone Area rapidly increased during the late 1960s and early 1970s. This population, along with other grizzly populations in the lower 48 states, was listed as threatened under the Endangered Species Act in 1975. As a result of this listing, many management changes were made to benefit grizzlies. A recovery plan was prepared and approved in 1982 and revised in 1993. This has set the stage for a possible delisting of the species in the Yellowstone area and a return of this species to state management, which is predicated on a state management plan. It is our hope that the success of these programs will result in recovered bear populations across western Montana as well.

2. DESCRIPTION OF GRIZZLY BEAR MANAGEMENT AREA FOR WESTERN MONTANA

Grizzly bears currently, or could in the near future, occupy suitable habitats within the 17 western Montana counties that encompass all or portions of three of the six areas designated as grizzly bear recovery zones in the United States (NCDE, including Glacier National Park; CYE; the Bitterroot Ecosystem) (Figure 2). Currently, there are known populations of grizzly bears in the NCDE and the CYE, and grizzly bears, or their sign, have been seen outside these areas as well. The counties in this portion of western Montana include: Lincoln, Flathead, Glacier, Pondera, Teton, Lewis and Clark, Powell, Missoula, Lake, Sanders, Mineral, Ravalli, Granite, Deer Lodge, Silver Bow, Jefferson, and Broadwater counties (Figure 3).

This chapter briefly describes the geographic and human environment of the 17-county area with respect to general description, size, human population, land ownership and economic interests. It describes the environment as it is today and provides a baseline against which any possible significant impacts, as a result of the proposed program, can be assessed. Moreover, because this DPEIS provides an assessment of issues at a programmatic level and not at the site-specific level, the descriptions of the environment presented in this chapter do not provide detailed information about conditions that exist at specific locations. Rather, these descriptions, coupled with information on bear biology in Chapter 3, provide the level of detail needed to assess the programmatic impacts presented in Chapters 4 and 5.

Not all portions of these counties provide suitable grizzly bear habitat, and some of the above attributes of these counties may affect the distribution and survival of grizzly bears. Given enough time and adequate management programs, grizzly bear distribution could extend beyond this 17-county area. For purposes of this plan, expansion in grizzly bear distribution during the next 10 years is most likely to occur within and adjacent to the designated recovery zones within this 17-county area. It is anticipated that the programs outlined in this plan would apply should grizzlies extend their distribution beyond these counties sooner than anticipated. In addition, the success of our program rests on coordinating and cooperating with surrounding state, provincial, tribal and federal agencies and private landowners. We will continue to work with them so that the needs of the grizzly bear population as a whole are met.

General Description

Most counties in this 17-county area are characterized by one or more river valleys divided by rugged mountain ranges. Glacier, Pondera, and Teton counties are located on the eastern front of the Rocky Mountain range and are characterized mostly by plains. Elevations range from 10,466ft. at Mount Cleveland in Glacier National Park (Montana's fourth highest point) to 1,820 ft. where the Kootenai River enters Idaho near Troy, Montana. Major river drainages include the Clark Fork, Missouri, Kootenai, Flathead, Two Medicine, Teton, Blackfoot, and Boulder rivers. To the south of this area, several rivers converge to form the Upper Missouri River, at Three Forks. Lower elevation habitats (below 6,000 ft.) vary greatly and include large areas of short-grass/sagebrush prairie, mountain foothills, intensively cultivated areas (grain and hay field agriculture), natural wetlands/lakes, riparian plant communities ranging from narrow stream bank zones to extensive cottonwood river bottoms, man-made reservoirs, small communities, and sizeable cities and towns.

The mountainous portion of this 17-county area (above 6,000 ft.) contain all, or portions of, 15 mountain ranges including the Purcell, Salish, Whitefish, Flathead, Coeur d'Alene, Cabinet, Mission, Swan,

Bitterroot, Garnet, Big Belt, Sapphire, Flint Creek, Elkhorn, and Anaconda. The Continental Divide runs through the eastern portion of this area. Mountainous habitats are dominated by coniferous forest (Douglas fir, lodgepole pine, Engleman spruce, western cedar, hemlock, whitebark pine, limber pine, ponderosa pine, juniper), and rocky subalpine/alpine communities found above timberline.

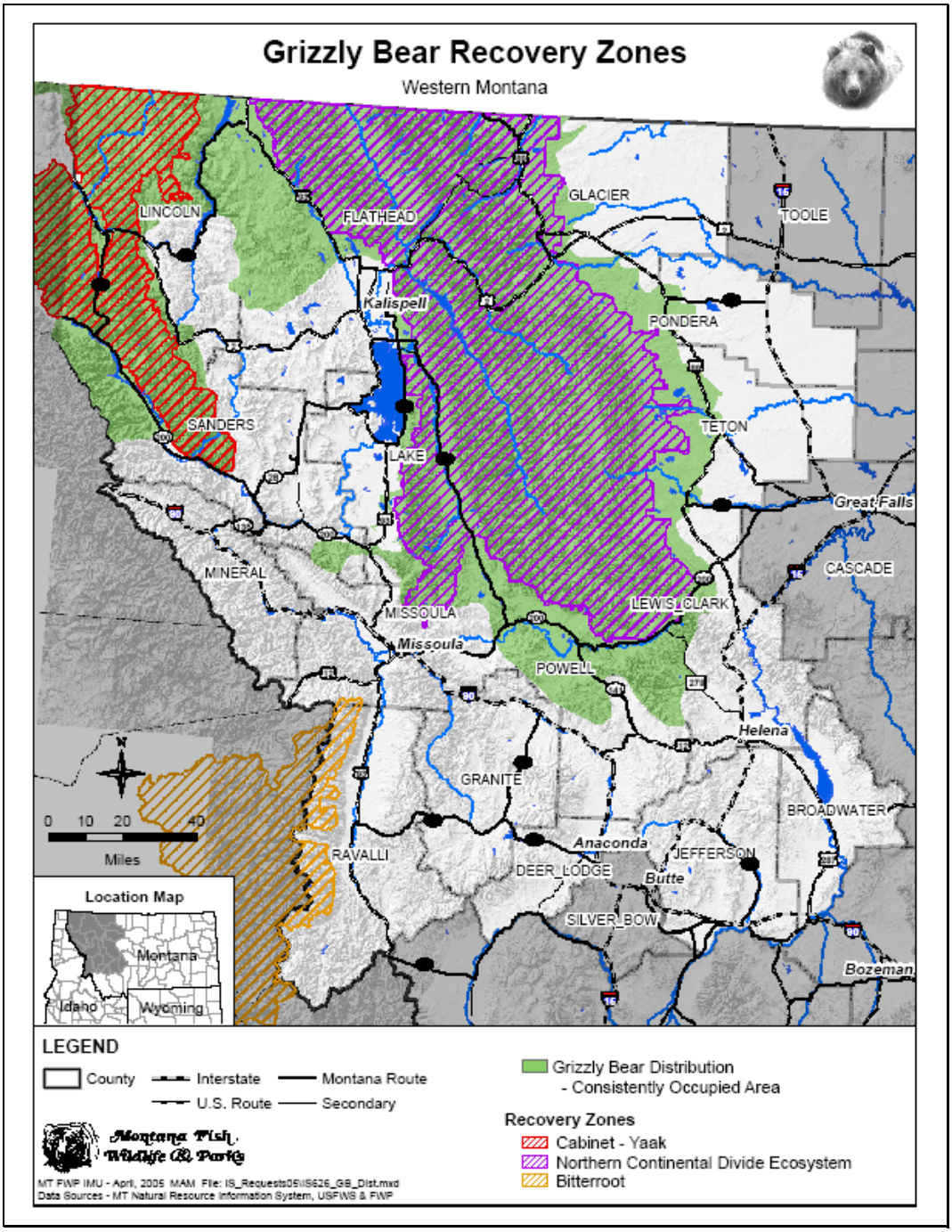

Figure 2. Grizzly bear recovery zones and distribution in western Montana.

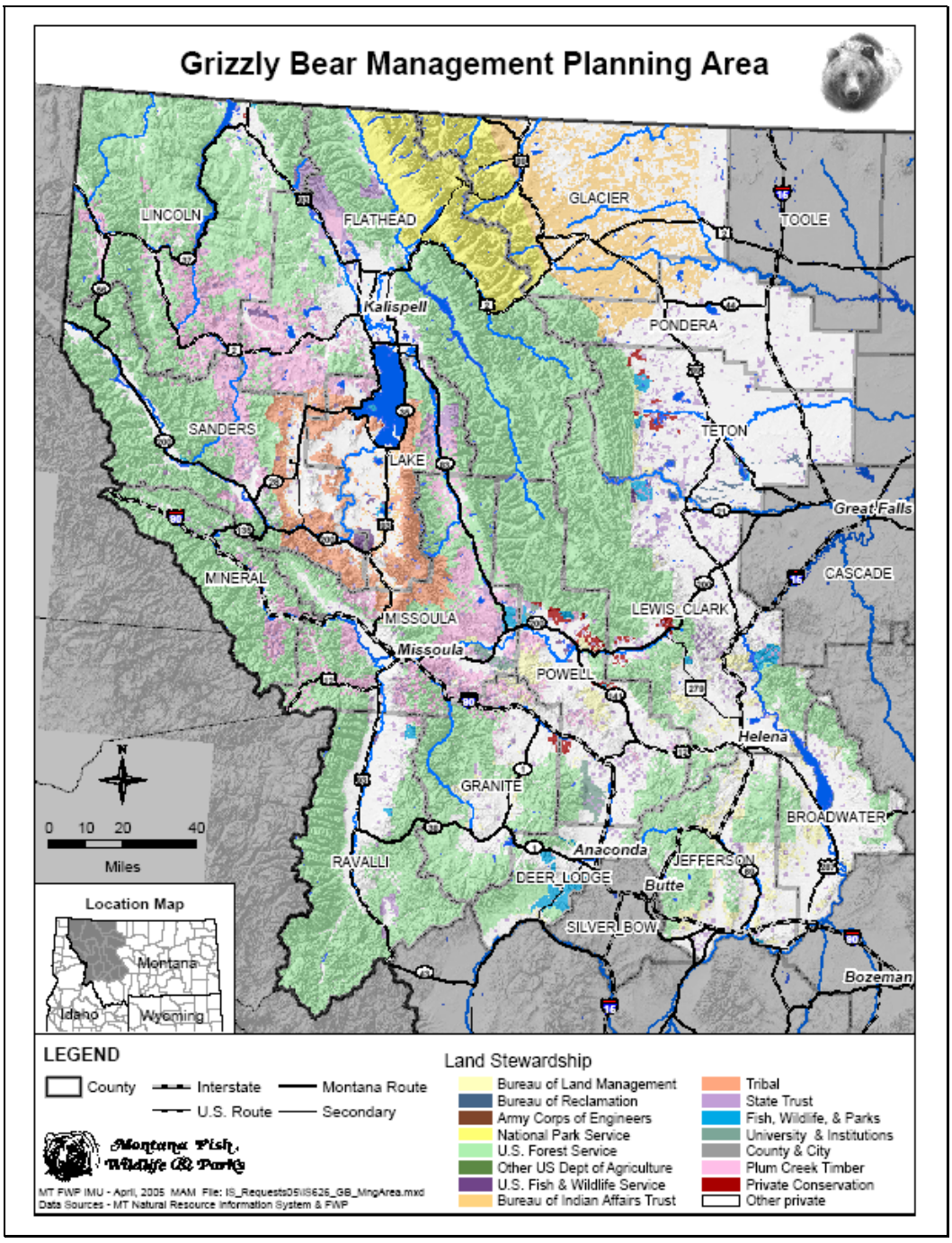

Figure 3. Grizzly bear management planning areas in western Montana.

Size and Human Population

The 17-county area encompasses approximately 24,248,960 acres or 37,889 square miles of western and northwestern Montana (Table 1) and represents approximately 47% of Montana's human population. County population size ranges from Missoula (pop. 99,018) to Granite (pop. 2,853). Population density for the entire area is 12.0 people per square mile, compared to 6.2 people per square mile for the entire

state. The most densely populated county is Silver Bow (46.1 people/sq. mi.) while the least densely populated county is Granite (1.7 people /sq. mi.). Major population centers include Missoula (60,722), Butte (32,519), Helena (26,718), Kalispell (16,391), Anaconda (8,953), Whitefish (5,784), Polson (4,497), Hamilton (4,163), Columbia Falls (3,963), Deer lodge (3,324), Cut Bank (3,096), Conrad (2,657), and Libby (2,606). Within the 17-county area, only these 13 towns and cities exceed a population of 2,000 people.

According to census figures, the population in this area has increased by 16,563 people (3.98%) between 2000 and 2004. During this same period the population of the entire state increased by an estimated 24,670 people or 2.7%. Ravalli County was the fastest growing county, increasing by 3,306 people (9.2%) from 2000 to 2004, while Silver Bow County population decreased by 1,513 people (-4.4%) during the same 4 year period.

Table 1. Geographic size and human population attributes of the 17 counties in the grizzly bear conservation management planning area.

County	Size (sq. mi.)	Human Population[1]	People per sq. mi	Population Change[2]
Lincoln	3,613	19,101	5.3	1.4
Flathead	5,098	81,217	15.9	9.1
Glacier	2,995	13,508	4.5	2.0
Pondera	1,625	6,148	3.8	-4.3
Teton	2,273	6,283	2.8	-2.5
Lewis and Clark	3,461	57,972	16.8	4.0
Powell	2,326	6,873	3.0	-4.3
Missoula	2,598	99,018	38.1	3.4
Lake	1,494	27,919	18.7	5.3
Sanders	2,762	10,945	4.0	7.0
Mineral	1,220	3,879	3.2	0.1
Ravalli	2,394	39,376	16.5	9.2
Granite	1,727	2,853	1.7	0.8
Deer Lodge	737	9,088	12.3	-3.5
Silver Bow	718	33,093	46.1	-4.4
Jefferson	1,657	10,857	6.6	8.0
Broadwater	1,191	4,530	3.8	3.3
Totals	**37,889**	**432,660**	**12.0**	**n/a**

[1]Based on 2004 population estimate from U.S. Census Bureau.
[2]Estimated % population change April 2000 to July 2004 from U.S. Census Bureau.

Land Ownership

The majority of mountainous habitat (above 6,000 ft.) is located within publicly owned National Forests, corporate timber lands and Glacier National Park. All, or portions of, the Kootenai, Kaniksu (part of the Idaho Panhandle National Forest complex), Flathead, Lolo, Bitterroot, Beaverhead-Deerlodge, Helena, and Lewis and Clark National Forests occur within this 17-county area. A small portion of mountainous habitat is in public ownership [Montana Department of Natural Resources and Conservation (DNRC), FWP, and BLM]; private ownership, including private subdivisions, ranches, land trusts, ski resorts and

timber company lands; and Bureau of Indian Affairs trust and tribal lands belonging to the Blackfeet Indian Reservation and Flathead Indian Reservation.

Low-elevation river valleys (below 6,000 ft.) are primarily situated on privately owned or tribal lands with a small proportion located in state (DNRC, FWP) and federal (BLM, USFS, and U.S. National Wildlife Refuge) public ownership. East of the divide, by far the largest amount of low-elevation land lies on privately owned ranches and farms while corporate timber lands and agriculture predominate west of the divide. Small, medium and large-sized communities also occupy several thousand acres of low-elevation river-valley habitat.

Special Management Areas

Several federal and state special management areas are located in the 17-county area. In large part, these areas are protected from human development and provide long-term habitat for a variety of wildlife species, including grizzly bears.

Special Management Areas include Glacier National Park which covers 1,014,000 acres. Eight National Wilderness Areas lie within mountain ranges in the 17-county area: Bob Marshall Wilderness (1,009,356 acres), in the Flathead, and Lewis and Clark National Forests; Great Bear Wilderness (286,700 acres) and Mission Mountains Wilderness (73,877 acres) in the Flathead National Forest; Scapegoat Wilderness (239,936 acres), in the Helena, Lewis and Clark, and Lolo National Forests; Cabinet Mountains Wilderness (94,272 acres) in the Kootenai National Forest; Rattlesnake Wilderness (32,976 acres) and Welcome Creek Wilderness (28,135 acres) in the Lolo National Forest; and Gates of the Mountains Wilderness (28,562 acres) in the Helena National Forest. Approximately half of the Anaconda-Pintler Wilderness (158,615 acres) in the Beaverhead-Deerlodge National Forest and a significant portion of the Selway-Bitterroot Wilderness (1,089,017 acres) in the Lolo and Bitterroot National Forests occur in this 17-county area as well. National Forest Wilderness Areas have the greatest restrictions on human use and development resulting in the least disturbed habitats available and are important in ensuring long-term grizzly bear survival.

Other special management areas include the Mission Mountains Tribal Wilderness (91,778 acres) in the Flathead Indian Reservation, the National Bison Range Complex (41,000 acres) in Lake and Flathead counties, the Lee Metcalf National Wildlife Refuge (2,800 acres) in Ravalli County, and 14 FWP Wildlife Management Areas (approximately 240,000 acres) in Lincoln, Sanders, Lake, Powell, Missoula, Ravalli, Deer Lodge, Silver Bow, Teton, Lewis and Clark, Cascade, and Broadwater counties.

Agricultural Industry

The 17-county area supports a large agricultural economy. In 2002, there were 8,857 farms and ranches in the 17-county area. By far the most common activities of these farms and ranches are raising beef cattle, growing forage (hay) for cattle, and growing grain crops (wheat, oats, barley). Sheep, hog, and dairy cattle are also raised in smaller numbers on ranches and farms in western and northwestern Montana. Beef cattle and sheep are grazed on privately owned grassland and on publicly owned (USFS, BLM, DNRC) grazing allotments. Some of these allotments occur in higher elevation habitats occupied by grizzly bears. Livestock depredation by grizzly bears is an issue that will continue to affect grizzly bear numbers, management and distribution.

Based on updated Montana agricultural statistics for 2005, there were an estimated 386,900 head of cattle (all cattle and calves) in the 17-county area (Table 2). Teton County had the most cattle (45,000 head) while Mineral County supported the fewest (700 head). In terms of cattle production, Teton county ranked 19th while Mineral ranked 56th out of Montana's 56 counties. Since 1940, total cattle numbers statewide have increased from 1.2 million to 2.4 million head with a peak of over 3.2 million head in the mid-1970s.

Table 2. Selected agricultural attributes of the 17 counties in the grizzly bear conservation management planning area.

County	# Cattle[1]	# Sheep[2]	Acres Crops Harvested[3]	# Apiary Sites[4]	# Bee Hives[4]
Lincoln	2,900	323	9,188	53	1,177
Flathead	11,900	599	81,462	70	1,197
Glacier	43,000	535	274,890	41	1,002
Pondera	23,300	4,425	307,976	87	3,214
Teton	45,000	6,816	321,043	132	4,093
Lewis and Clark	40,000	3,776	60,471	92	2,579
Powell	41,000	851	57,656	96	2,401
Missoula	8,700	1,770	22,290	150	3,495
Lake	44,000	1,743	78,680	120	3,563
Sanders	17,600	553	31,942	120	5,028
Mineral	700	71	2,746	17	468
Ravalli	34,000	4,473	48,933	147	6,543
Granite	21,300	457	27,091	49	1,265
Deer Lodge	8,900	1,065	13,765	28	816
Silver Bow	5,700	291	6,308	19	649
Jefferson	22,300	751	27,260	43	1,526
Broadwater	16,600	(D)[5]	81,222	63	2,520
Totals	**386,900**	**28,499**	**1,452,923**	**1,327**	**41,536**

[1]Inventory estimates of all cattle and calves for year 2005, from Montana Agricultural Statistics Service, Volume 1, 2005.
[2]Inventory estimates of all sheep and lambs for year 2002 from Montana Agricultural Statistics Service, Volume 1, 2002.
[3]Estimates of acres harvested in 2002, from Montana Agriculture Statistics Services, Volume 1, 2002.
[4]Information provided by Montana Department of Agriculture, pers. comm. Patricia Denke, 2006.
[5]Withheld to avoid disclosing data for individual farms.

In 2002, there were an estimated 28,500 sheep (all sheep and lambs) in the 17-county area. Teton County had the largest number of sheep (6,816) while Mineral County had the fewest sheep (71). In terms of statewide sheep production, Teton County ranked 12th while Mineral had too few sheep to merit a ranking. Statewide, since 1940, sheep production has steadily declined from over 4.2 million to about 305,500 head. Based on 2002 data, an estimated 1,453,000 acres of crops were harvested in the 17-county area. Crop harvest ranged from 321,043 acres in Teton County to 2,746 acres in Mineral County.

Since Montana is predominately a cereal grain and livestock producing state, traditional horticultural enterprises account for only about 2.5% of the total agricultural income. While some horticultural enterprises are generally distributed throughout the state, others, such as sweet and sour cherry

production are concentrated as a result of factors such as climate. Sweet-cherry production is primarily located to in the vicinity of Flathead Lake, where 1,200-1,400 acres are devoted principally to production of the cultivar 'Lambert'. Commercial sour-cherry production in Montana tends to be restricted to the Bitterroot Valley, where about 300 acres are devoted to production of the principal cultivar 'Montmorency'. In addition, honey production enterprises are found throughout western Montana. In 2005, Ravalli, Missoula and Teton Counties supported the largest number of honey bee sites in the 17-county area, ranking 1st, 2nd and 3rd respectively (Table 2). Rankings varied in terms of actual numbers of hives, however; Ravalli, Sanders and Teton counties respectively reported the largest number of active bee hives.

Mining Industry

Large mineral deposits, ranging from talc to gold, are located throughout western Montana. Of these, metallic minerals provide the largest share of Montana's non-fuel mining income, with copper and gold leading the list of important metals. Based on data compiled in 2001, western Montana supports a total of 91 mine sites. Thirty-two sites are valued for the metal content of the ores produced and 59 sites are involved with the production of industrial or saleable commodities. Major mines whose production serves markets outside of the state include three gold mines, one platinum mine, one copper/ molybdenum mine, three talc mines and four limestone quarries. Production from the remaining mines serves local markets and operations tend to be intermittent or seasonal.

With the recent rise in commodity prices, mining interest and activity in the western portion of the State has increased. Within the Cabinet-Yaak area, in 2004, the Genesis Troy copper/silver mine, a subsidiary of Revett Silver, resumed production. In addition, two proposed mines are currently under deliberation. The proposed Rock Creek copper/silver mine would be located on the west slope of the Cabinet mountain range, while the Montanore copper/silver mine, would be on the east slope. Thus, there is the potential for several large scale mineral mines to become operational in the future.

In addition to non-fuel mining, oil and gas development activity is concentrated along the Rocky Mountain Front. Other potential sites for development include the North Fork of the Flathead, in British Columbia, adjacent to the NCDE.

Timber Industry

The majority of Montana's forested lands (23 million acres) are located within the western part of the state. Nearly 4 million acres of these forest lands are permanently reserved as either wilderness areas or National Parks. Eleven million acres of the remaining forested land is administered by the USFS, with 5.2 million acres of this public estate designated by current forest plans as suitable for timber production. Private forest lands occupy approximately 6 million acres, with 2 million owned and managed by timber companies like Plum Creek, F. H. Stoltze Land and Lumber Company and R-Y Timber. Another four million acres of private forest lands are owned by some 11,000-plus private individuals.

Within the state, total timber production over the past two decades has fallen from an annual high of approximately 1.2 billion board feet (MMBF) in the mid 1980s to an estimated 700 MMBF in 2004 (Figure 4). The reduction can be attributed primarily to a 70% decline in timber harvested from national forests. Harvests from other ownership categories have remained relatively stable during the period with much of the year-to-year fluctuation driven by changing market conditions.

In general, Montana's estimated timber harvest for 2004 was about equal to 2003 levels, with private harvest rising slightly in response to slightly higher prices. Based on data for 2003, 70% of the timber harvested in Montana was from private lands, national forests supplied 20 percent and all other ownerships accounted for 10%.

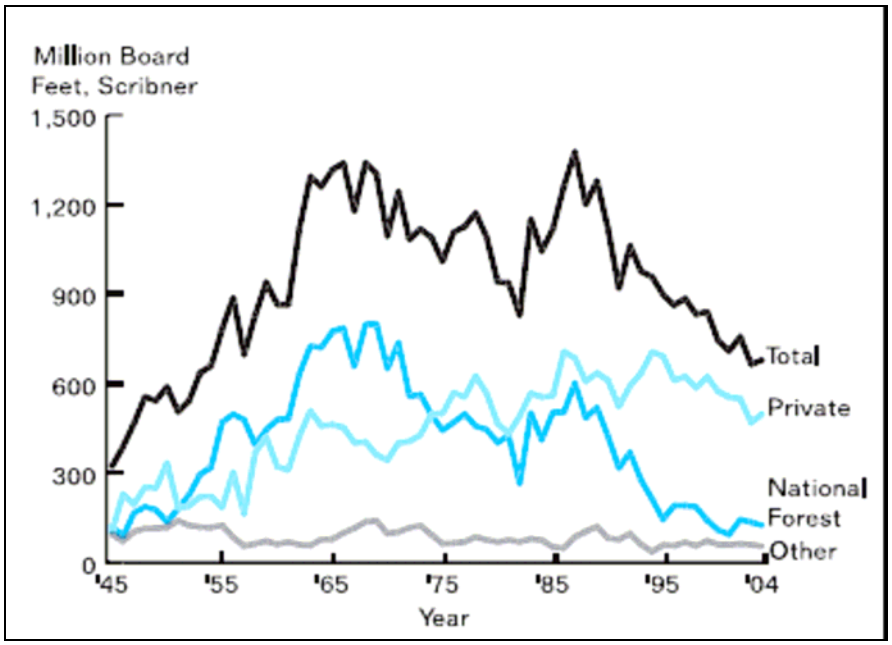

Figure 4: Montana timber harvested by ownership 1945-2004.
Source: Bureau of Business and Economic Research, The University of Montana-Missoula: USDA Forest Service Region One, Missoula, Montana.

Recreational Opportunities

Outdoor recreation and tourism is a major component of the economy in this 17-county area. Western Montana is nationally renowned for its high quality fishing, hunting, camping, hiking, river floating, skiing, snowmobiling, wildlife viewing and sightseeing opportunities. Nearby, Glacier National Park and Flathead Lake attract large numbers of people to the area every year. Many of these outdoor activities are made possible by public ownership of large tracts of mountainous habitat and additional access provided by many private landowners.

Recreationists have largely unhindered access to millions of acres of undeveloped land. Some of this land is currently, or based on documented trends of increasing distribution will be, occupied by grizzly bears. As bear numbers and distribution increase, and the number of outdoor enthusiasts grow, contact and interaction with people engaged in outdoor activities is likely to increase.

3. SUMMARY OF GRIZZLY BEAR BIOLOGY

Physical Characteristics

Grizzly bears are generally larger than black bears and can be distinguished by longer, curved front claws, humped shoulders, and a face that appears concave (Figure 5). A wide range of coloration from light brown to nearly black is common. Guard hairs are often paled at the tips; hence the name "grizzly". Spring shedding, new growth, nutrition, and climate all affect coloration.

In the lower 48 states, the average weight of grizzlies ranges from 400-600 pounds for males to 250-350 pounds for females. Males may occasionally reach 800 to 1,000 pounds. Differences in body mass between males and females are influenced by factors such as age at sexual maturity, samples from within the population, season of sampling, reproductive status, and differential mortality.

Body mass is dynamic in grizzly bears and varies seasonally. During late summer and fall, grizzlies gain weight rapidly, primarily as fat when they feed intensively prior to denning. Because bears rely solely on their stored energy reserves during hibernation, this pre-denning weight gain is essential for reproduction and survival. Peak body mass generally occurs in fall just prior to hibernation. Bears metabolize fat and muscle during the denning period.

Grizzly bears are relatively long-lived, and individuals are known to have lived 40 years in the wild; a captive bear lived 47 years. In general, the oldest age classes are listed at 28 years for males and 23 years for females, although individuals can live longer. For example, in 2005, Kasworm and colleagues documented a female grizzly bear in the Cabinet Mountains that lived to be 37 years old.

Social Organization and Behavior

Adult bears are individualist in behavior and normally solitary wanderers. Except when caring for young or breeding, grizzly bears have solitary patterns of behavior. Individuals probably react from learned experiences. Consequently, two individual bears may respond in opposite ways to the same situation. Strict territoriality is unknown, with intraspecific defense limited to specific food concentrations, defense of young, and surprise encounters.

Each bear appears to have a minimum distance within which another bear or person cannot enter; any intrusion of this distance may evoke a threat or an attack. Surprise is an important factor in many confrontations involving bears and humans. A female with young exhibits an almost reflexive response to any surprise intrusion or perceived threat to her "individual distance" or that of her cubs. Defense of a food supply is another cause of confrontation between humans and bears. Bears generally defend a kill or carrion out of perceived need.

Grizzly bears of all ages will congregate readily at plentiful food sources and form a social hierarchy unique to that grouping of bears. Mating season is the only time that adult males and females tolerate one another, and then it is only during the estrous period. Other social affiliations are generally restricted to family groups of mother and offspring, siblings that may stay together for several years after being weaned, and an occasional alliance of sub-adults or several females and their offspring.

Figure 5. Know your bears identification brochure.

Habitat Requirements

In general, grizzly habitat requirements are determined by large spatial needs for omnivorous foraging, winter denning, behavior, and security cover. Large roadless areas are ideal as year round grizzly habitat. Roads can displace bears depending on tolerance of the bear. Furthermore, roads can also increase mortality risk if humans who kill bears use such roads. However, grizzly bears can and do survive in roaded areas if tolerance for their presence is high. Home ranges must include a number of

habitat types. Habitat needs vary for individual bears depending on their age and sex. These requirements may also vary annually with seasonal changes in foraging needs.

Food

The broad historic distribution of grizzly bears suggests adaptive flexibility in food habits of different populations. Although the digestive system of bears is essentially that of a carnivore, bears are successful omnivores, and in some areas may be almost entirely herbivorous. Grizzly bears must avail themselves of foods rich in protein or carbohydrates in excess of maintenance requirements in order to survive denning and post-denning periods.

The search for food has a prime influence on grizzly bear movements. Upon emergence from the den they seek lower elevations, drainage bottoms, avalanche chutes, and ungulate winter ranges where their food requirements can be met. Herbaceous plants are eaten as they emerge, when crude protein levels are highest. Throughout late spring and early summer they follow plant phenology back to higher elevations. In late summer and fall, there is a transition to fruit and pine nut sources, as well as herbaceous materials. This is a generalized pattern, however, and it should be kept in mind that bears are individuals trying to survive and will go where they best can meet their food requirements.

Grizzly bears are opportunistic feeders and will prey or scavenge on almost any available food including ground squirrels, ungulates, carrion, and garbage. In areas where animal matter is less available, roots, bulbs, tubers, fungi, and tree cambium may be important in meeting protein requirements. High quality foods such as berries, nuts, and fish are important in some geographic areas.

In the CYE and portions of the NCDE, huckleberries are the major source of late summer food for bears that enable them to accumulate sufficient fat to survive the denning period and enable females to produce and nurture cubs. On the Eastern Front, graminoids, roots and corms, and fruit had the highest percent volume and highest important values of all bear food categories of analyzed grizzly bear scat. However, mammals, sporophytes, and pine nuts were seasonally important. Throughout the region, bears also commonly feed on gut piles and animals wounded and/or lost during the fall big game hunting season. This can be an important source of protein for bears.

Cover

The relative importance of cover to grizzly bears has been well documented. Whether grizzly bears use forest cover because of an innate preference or to avoid humans is unknown. The importance of an interspersion of open parks as feeding sites associated with cover is also important.

Forest cover was found to be very important to grizzly bears for use as beds. Most beds were found less than a yard or two from a tree. In the NCDE, researchers found the majority of radio collared grizzly bears in the forest. It is possible that this was biased by daytime relocations and new techniques which allow locating bears 24 hours a day could change this. In the CYE, grizzly bears made greatest annual use of closed timber, cutting units, timbered shrubfields, and mixed shrub snowchutes.

Other studies have shown an avoidance of timbered cover types. In a study done in the Swan Mountains, three cover types found to be important to grizzly bears were non-vegetated/grassland types, avalanche chutes, and open slab rock areas. While forest were found to be among the least statistically selected cover type, it is important to note that nearly half of the radiolocations of marked bears occurred in this

type during all seasons. On the East Front, the day time cover types most important to grizzly bears were closed timber, rock, prairie grassland, and aspen stands.

Denning

Western Montana grizzlies generally spend 5-6 months a year in dens. Most dens are excavated but natural ones can also be used. Den digging can start as early as September or take place just prior to entry in mid-November. Dens are usually dug on steep slopes where wind and topography cause an accumulation of deep snow and where the snow is unlikely to melt during warm periods. Finding an isolated area that will be well covered with a blanket of snow will minimize the escape of body-warmed air and will provide a secure environment for a hibernation period that may last up to six-months. In western Montana, dens typically occur at elevations between 5,900-6,600 feet and at slopes greater than 50% in open and open-timbered areas. Most den sites occur on western, northern, or eastern aspects.

Generally, grizzly bears den by late October to mid-November and emerge in mid-March to Late April. Females with young typically are the first to enter dens and the last to emerge in the spring, while males usually are the last to enter and the first to emerge in the spring. In the Swan Mountains, males have entered their dens as late as mid-December and females with cubs have been known to emerge as late as mid-May. In the Yaak River, male grizzly bears typically enter dens during December with many individuals remaining active until late December.

Security at den sites appears to be an important management consideration, especially if human disturbance occurs near the time of den entry. There has been some concern of the possible effects of snowmobiles on denning bears. This is increased with increasingly powerful snow machines and the practice of "high marking" which could occur in denning habitats. A study in northwestern Montana did not observe any overt effects of snowmobiles within 1.5 miles of dens. The greatest potential impact on bears was during spring when females with cubs were still confined to the vicinity of the den, and also after bears had moved to gentler terrain more suitable to use by snow machines. Predictable denning chronology and the behavioral plasticity bears exhibit toward den and den site characteristics suggest potential human impacts to denning grizzly bears may be mitigated by careful consideration when implementing strategies for human activity.

Home range

In the CYE, adult male grizzly bear life ranges recorded by various USFWS researchers between 1983 and 2004 averaged 457 mi^2 while female life ranges during the same period averaged 204 mi^2. Female offspring generally establish home ranges around their maternal range.

On the East Front, females with cubs were found to restrict movements compared to years when they did not have cubs. The ability to confine activities during years with cubs may depend upon habitat conditions and the distribution of food resources, and may impart survival advantages to these litters.

In the Swan Mountains, core area of home ranges varied by sex and time of year. Core areas for males were larger during the early season relative to the late season. The converse was found for females. The larger core size for males during the early season may be due primarily to increased movements by reproductively active males during the breeding season. The extent of early season movements for females each year depended on whether they had young, and the age of the young. During the late season male core areas were smaller; a result of more restricted and concentrated foraging behavior.

Female core areas were larger during the late season relative to the early season. It is during this season the bears fed extensively on the fruit of several shrubs to gain necessary fat reserves for denning.

Early season core areas tend to be at mid- to high-elevation sites (temperate and sub-alpine zones) where there are a higher density of avalanche chutes, and lower density of high-use roads and total roads. This suggests that during the early season bears are concentrating their use in areas having minimum human disturbance at a time when much of the higher elevation habitat is still covered with snow.

Adult females are the most important cohort for population trend and overall health, therefore considerations of the needs and sensitivities of adult females should guide management. Habitat management emphasis in the NCDE is placed on protection of female grizzly bears, and it seems logical that identification of female core areas should receive high priority for habitat conservation. Seasonal core areas of individual females overlap extensively, suggesting that contiguous blocks of core habitat meeting the annual needs of females could be identified.

Home ranges of grizzly bears in northwestern Montana overlap extensively on a yearly and lifetime basis. However, bears typically utilize the same space at different times. Male home ranges overlap several females to increase breeding potential, but males and females consort only during the brief period of courtship and breeding. Adult male bears whose home ranges overlap seldom use the same habitat at the same time to avoid conflict.

There is movement of grizzly bears across the political border between the U.S. and Canada. Grizzly bears captured south of the international boundary in the Yaak study area of northwest Montana and northern Idaho were monitored crossing into Canada on an annual basis, and bears marked in the U.S. and Canada in the NCDE have also crossed the border in both directions.

Natality

For grizzlies in western Montana, breeding occurs between May and July with cubs born in the den the following winter. The average litter size is two cubs (range 1-4). Reproductive intervals for females average 3 years, and animals that lose young prior to or during the breeding season may come into estrus and breed again that same year. Age when cubs are first produced is generally 5.5 for females (range 4-8 years). Offspring remain with the female 2-4 years before weaning. Grizzly bears are promiscuous. Females can mate with multiple males and have a litter with offspring sired by different males. Males can sire litters with multiple females in a breeding season. Male grizzly bears are sexually mature around 4.5 years of age but larger, dominant males may preclude young adult males from siring many offspring.

The limited reproductive capacity of grizzly bears precludes any rapid increase in the population. Grizzly bears have one of the lowest reproductive rates among terrestrial mammals, resulting primarily from the late age of first reproduction, small average litter size, and the long interval between litters.

Assuming initiation of breeding at 4.5 years, a female grizzly bear would add her first recruitment to the population when she was 5.5 years. The age of second breeding likely would not occur until she is 7.5. Therefore, during the first 10 years of her life, a female grizzly bear is capable of adding only two litters to the total population. If there are litters of two cubs with a 50:50 sex ratio, and a 50% survivorship of young to age 5.5, at best she can replace herself with one breeding age female in the first decade of her life.

Assuming optimum conditions, 50% survivorship to age 5.5, equal sex ratios, and using the oldest documented female weaning her last litter at age 24.5 years, a single female would have the potential capability of adding only three and one-half females to the population during her lifetime. Given a normal rate of mortality for all age classes, a protracted reproductive cycle of 3.5 years to 7 years, and the increasing stresses of habitat encroachment by humans, actual reproductive expectancy is usually far less. Obviously, providing sufficient protection for females is essential to recovery and long-term population management.

Natural Mortality

The causes of natural mortality for grizzly bears are not well known. Bears do kill each other. It is known that adult males kill juveniles and that adults also kill other adults. Parasites and disease do not appear to be significant causes of natural mortality but they may very well hasten the demise of weakened bears. Natural mortality during the denning period is not well documented. Several authors believe some bears die during denning, especially following periods of food shortages. However, few such deaths have been recorded.

Monitoring efforts conducted by USFWS scientists in the CYE, between 1999 and 2001, suggest that eight grizzly bears died of natural causes during this time period. Seven of these eight mortalities involved cubs. The increase in natural mortality beginning in 1999 may be linked to poor food production during 1998-2000. Huckleberry production during these years was about half the 11-year average. Huckleberries are the major source of late summer food for bears in the CYE that enable them to accumulate sufficient fat to survive the denning period and enable females to produce and nurture cubs. Poor nutrition often results in failure to reproduce the following year. Poor food production may also cause females to travel further for food, which may expose cubs to greater risk of mortality from predators or accidental deaths.

In the Swan Mountains during the period 1987-1996, nine grizzly bears died of natural causes. Two causes included an adult female believed to be killed and fed upon by an adult male, and a female accompanied by 2 cubs killed in an avalanche.

Human-Caused Mortality

Upon emergence from the den, bears move considerable distances from high, snow-covered elevations to lower elevations to reach palatable, emerging vegetation on avalanche chutes, or to feed on winter-killed or weakened ungulates on foothill winter ranges. This type of movement often occurs on the Rocky Mountain front region of Montana. Such movement of bears to lower elevations often takes them near areas of human habitation, and may increase the incidence of human/bear conflicts. Similar movement patterns often occur in the fall due to ripening of fruit and berries at lower elevations. This type of movement occurs on the west front of the Mission Mountains in Montana.

There are a variety of human-caused mortalities. Numbers of mortalities and their causes for the NCDE and CYE are presented in Figures 6-9. These can be mistaken identity during legal black bear hunting season, self defense, management removal of food habituated problem bears, collision with vehicles and/or trains, or killing for malicious purposes.

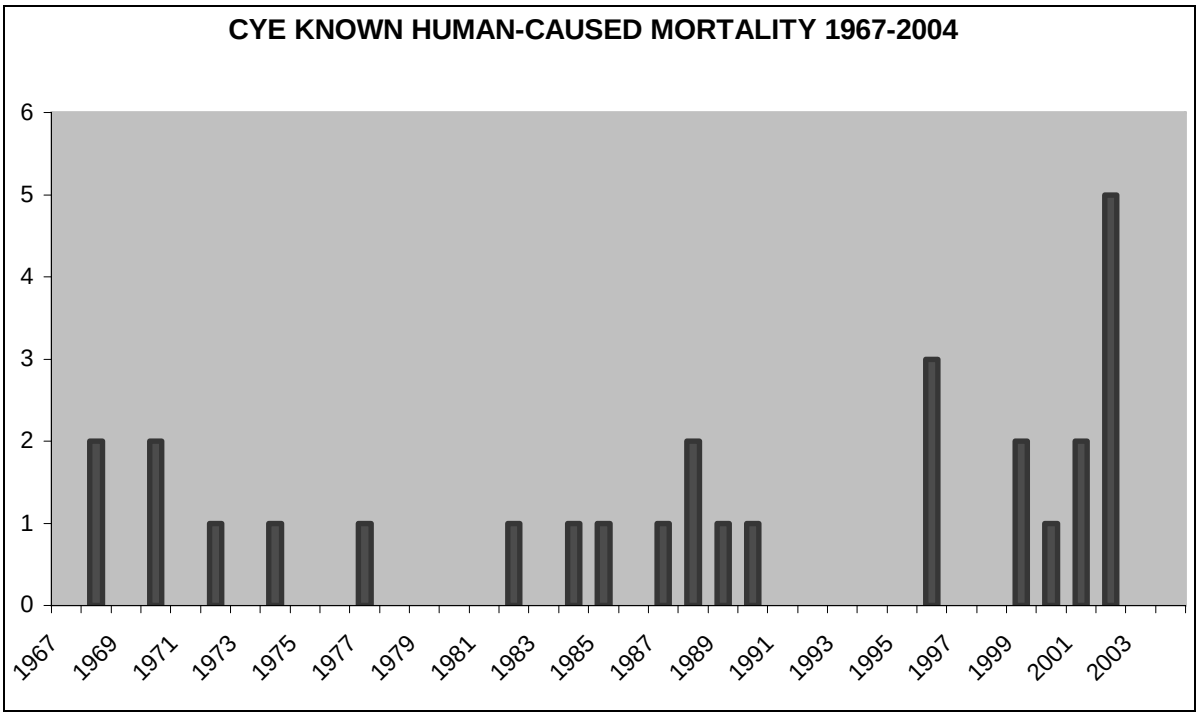

Figure 6. Known human-caused grizzly bear mortality in the Cabinet-Yaak Ecosystem 1967-2004.

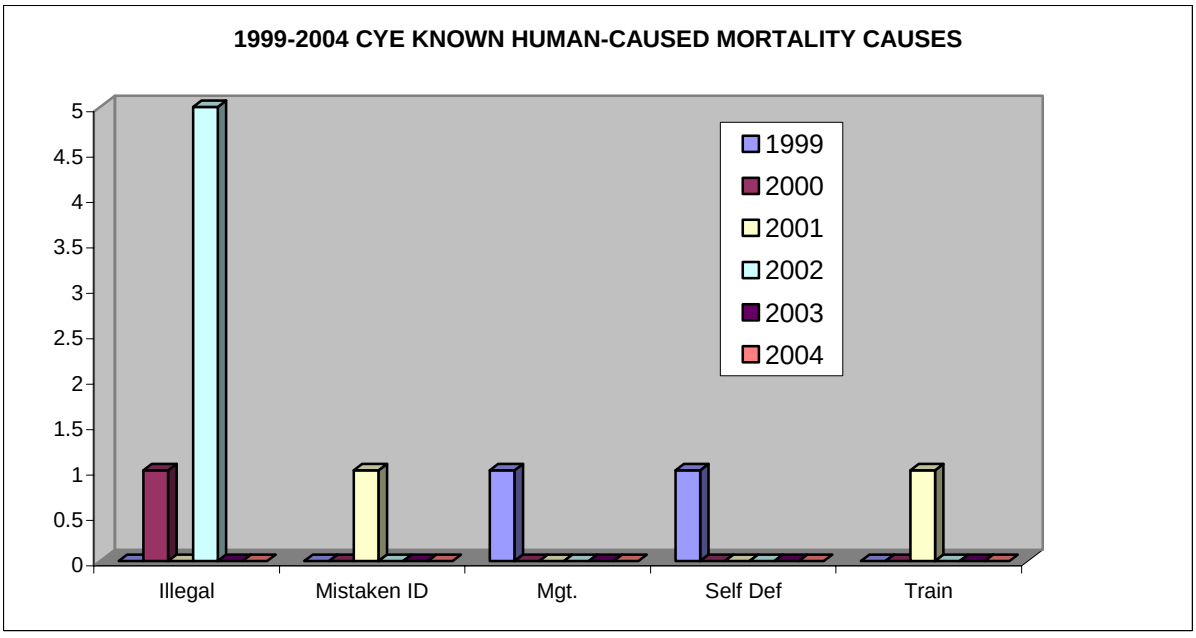

Figure 7. Known human-caused mortality causes in the Cabinet-Yaak Ecosystem 1999-2004

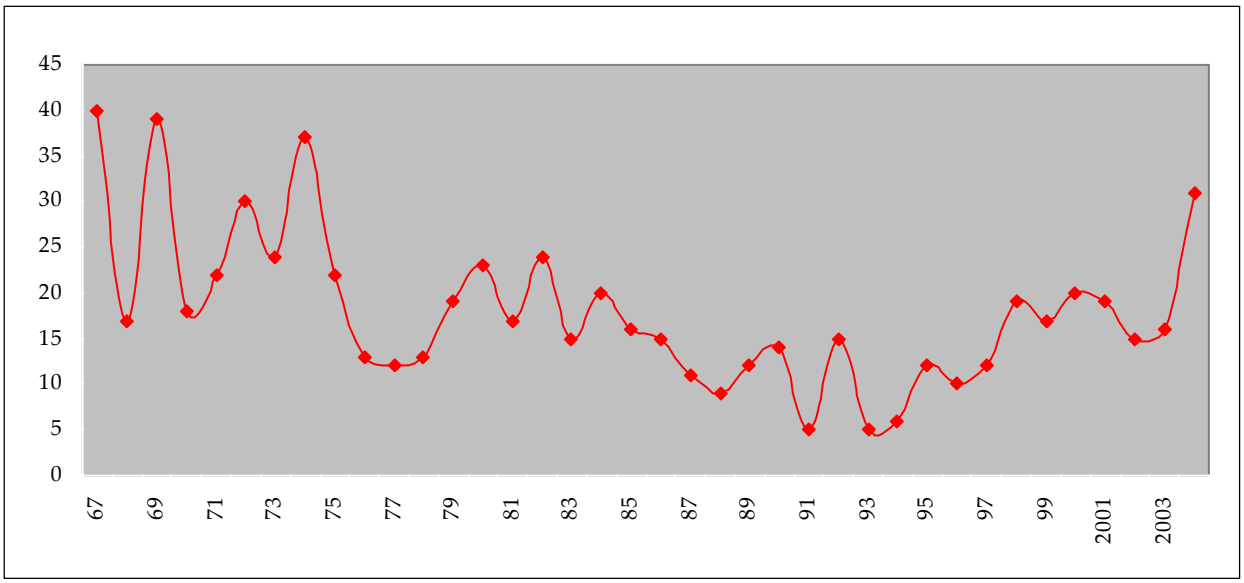

Figure 8. Known human-caused grizzly bear mortality in the Northern Continental Divide Ecosystem 1967 – 2004.

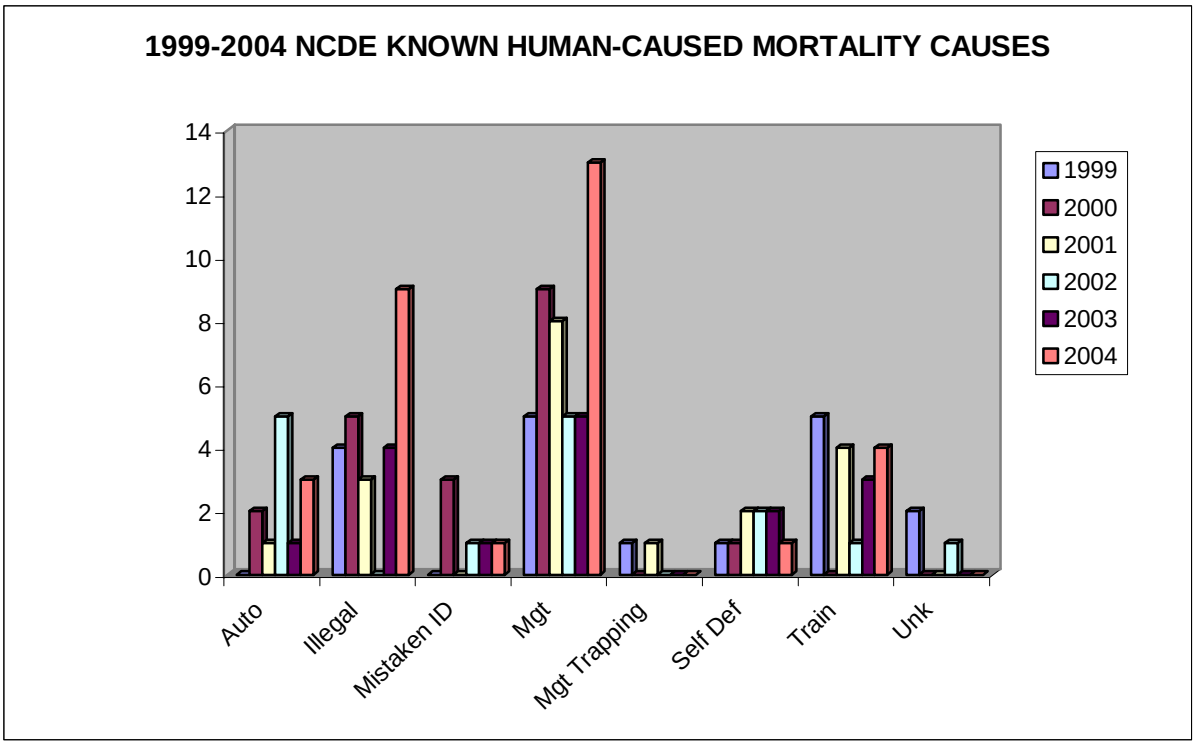

Figure 9. Known human-caused mortality causes in the Northern Continental Divide Ecosystem 1999-2004.

Density

Grizzly bears are long-lived animals that range over extensive geographic areas. These traits make it difficult to census and assess population levels. Furthermore, capture and marking of grizzlies is expensive and dangerous for both researchers and bears. In combination, these factors result in limited sample sizes for statistical analyses. Thus, population estimates and dynamics calculations are often contested. Generally, researchers do not contest the fact that grizzlies have low reproductive rates and that grizzly populations are very susceptible to human impacts. Also recognized is that bear numbers are very sensitive to changes in female survival rates.

As with all other bear populations in the world, it is not possible to determine definitively the actual numbers of bears in western Montana. Any figure will, therefore, be a result of some form of estimation. Density estimates have been, and continue to be, a widely accepted method for estimating grizzly bear populations. This may be changing however. In the past, grizzly bear management programs in the NCDE were based on density estimates (Table 3). These estimates were developed and validated using the best available information. All estimates were developed using very conservative approaches to ensure that the management program in no way negatively impacted the grizzly population. Currently there is a major new effort underway to develop a point population estimate using DNA samples from hair. Results of this effort should be available in 2006 and will allow us to evaluate past density estimates as well as provide a more precise population estimate in the ecosystem.

Table 3. Minimum density estimates for grizzly bears in the NCDE from previous programmatic EISs.

Area	Size (mi^2)	Density (mi^2/bear)	Number of Bears
Red Meadow	215	10-15	14-22
Whitefish	831	18-25	33-46
Glacier National Park	1,583	6-8	198-264
St. Mary	211	10-20	11-21
Badger-Two Medicine	323	27-38	9-12
South Fork Flathead River	1,624	10-13	125-162
East Front	1,119	25-31	36-45
Swan Front	780	20-30	26-39
Mission Mountains	1,044	25-45	23-42
Scapegoat	1,903	56-112	17-34
Total	**9,633**	**14-20**	**492-687**
Total excluding GNP	**8,050**	**19-27**	**294-423**

Status in the NCDE

The Northern Continental Divide recovery zone encompasses about 9,600 mi^2 of northwestern Montana and is one of five areas in the contiguous 48 states where grizzly bears still persist (see Figure 2). Moreover, the area is contiguous to Canadian grizzly bear populations and interchange of bears has been documented. Recent data suggests that bears in the NCDE occupy approximately 37,460 km^2 (14,500 mi^2) of habitat that includes Glacier National Park, parts of the Flathead and Blackfeet Indian Reservations, parts of five national forests (Flathead, Helena, Kootenai, Lewis and Clark, and Lolo), Bureau of Land Management lands, and a significant amount of state and private lands. Encompassed within this region

are four wilderness areas (Bob Marshall, Mission Mountains, Great Bear and Scapegoat), one wilderness study area (Deep Creek North) and one scenic area (Ten Lakes). While not officially designated a wilderness area, the Kootenai National Forest manages the Ten Lakes Scenic Area to preserve its wilderness characteristics.

The grizzly bears in Glacier National Park (GNP) represent the keystone of the NCDE population in northwest Montana, and current estimates indicate more than 200 individuals reside in the area. Because of its proximity to Canadian bear populations, large land area, and high proportion of designated wilderness and national park lands, the NCDE offers some of the best long-term prospects of supporting a viable grizzly bear population among the six areas designated as grizzly bear recovery zones in the U.S.

Grizzly bear distribution in the NCDE has been, and still is, documented through radio-collared animals, female with cubs/young observations, tracks, scats, other sightings, mortality locations, and photographic detection methods. As female grizzly bears with cubs are extremely difficult to observe in the NCDE because of dense forest canopies and thick shrub fields, existing minimum counts for the NCDE are likely inadequate and far below actual population size and as a result do not reflect the true status of this grizzly bear population. Consequently, until now, statistically rigorous grizzly population studies in forested habitat could only be accomplished with radio telemetry. New technology involving DNA identification of hair and scat samples will, however, provide additional information of distribution and population parameters. In the future, population estimates, derived from the 2004 USGS DNA point estimate, will form the base against which trend will be determined.

Recent advances in genetic technology allow identification of species, sex, and individuals from DNA extracted from bear hair and scats without handling bears. With proper survey design and necessary funding, identification of individuals and sex typing data can be used to determine (1) minimum population size, (2) provide a way to measure population trends for both black and grizzly bears, and (3) genetic diversity of the populations. Now that individual bears can be identified from hair and scats, sign surveys to monitor population trend status will be more powerful.

In addition to the DNA-based total population estimate, a program to estimate the trend of the NCDE population has been initiated. Trend monitoring will determine the fate and reproductive status of female grizzly bears, allowing biologists to determine if the population is increasing, decreasing, or is stable. A sample of 25 or more adult female grizzly bears will be radio-collared and monitored into the future on an annual basis. More importantly, the sampling scheme will be designed to minimize bias of the radioed animals towards any one area, and balance bear density with the radioed sample across the area. For example, if 50% of the bears reside outside Glacier National Park, then 50% of all bears collared in the study will be from locations outside the park. This will provide a calculation of population trend with confidence intervals across differing land use patterns.

The DNA-based total population estimate in combination with trend estimates will provide the necessary critical information on the NCDE population to determine how this population is performing and to understand how, or if, management efforts are meeting the needs of this population. The population trend monitoring effort will continue every year to gain the data needed to update trend information. This is the same population trend monitoring system that is currently in place in the Yellowstone ecosystem. Mortality levels and relationship to recovery criteria presented in the 1993 Grizzly Bear Recovery Plan are presented in Tables 4 and 5.

Table 4. NCDE recovery zone grizzly bear population parameters including minimum unduplicated counts of females with cubs (FWCs), distribution of females with young and known human-caused mortality, 1997-2004.[1]

Year	Annual Undup. FWCs (Out/In GNP)	Annual Human Caused Adult Female Mortality	Annual Human Caused All Female Mortality	Annual Human Caused Total Mortality	4% Total Human Caused Mortality Limit	30% All Female Human Caused Mortality Limit	Total Human Caused Mortality 6 Year Average	Female Human Caused Mortality 6 Year Average
1997	13 (9/4)	1	5	12	14.6	4.4	10.0 (60/6)	4.7 (28/6)
1998	33 (22/11)	3	8	19	13.9	4.2	10.7 (64/6)	4.5 (27/6)
1999	18 (13/5)	3	4	17	13.9	4.2	12.7 (76/6)	5.0 (30/6)
2000	24 (13/11)	7	9	19	15.0	4.5	14.8 (89/6)	6.0 (36/6)
2001	26 (15/11)	6	9	19	12.7	3.8	16.0 (96/6)	6.5 (39/6)
2002	23 (16/7)	3	4	15	13.9	4.2	16.8 (101/6)	6.5 (39/6)
2003	19 (11/8)	4	7	16	12.9	3.9	17.5	6.8
2004	21 (8/13)	5	21	34	12.0	3.6	20.0	9.0

[1] data from USFWS Grizzly Bear Coordinator (Chris Servheen, pers. comm.) and FWP internal reports.

Table 5. Status of the Northern Continental Divide Ecosystem recovery zone during 1999-2004 in relation to demographic recovery targets from the grizzly bear recovery plan (USFWS 1993).

Recovery Criteria	Target	1999-2004
Females w/cubs (6-yr average)	22	21.8
Inside GNP (6-yr avg)	10	9.2 (55/6)
Outside GNP (6-yr avg)	12	12.7 (76/6)
Human Caused Mortality limit (4% of minimum estimate)	12	20
Female Human Caused mortality limit (30% of total mortality)	3.6	9.0
Distribution of females w/young (Missions occupied)	21 of 23	22 of 23

Status in the CYE

The Cabinet-Yaak recovery zone encompasses about 2,600 mi^2 of northwest Montana and northern Idaho and lies directly to the south of Canada (see Figure 2). The Kootenai River bisects this area with the Cabinet Mountains portion to the south and the Yaak River portion to the north. The degree of grizzly bear movement between the two portions is unknown but thought to be minimal and has not been documented to date. To obtain information on population status and habitat needs of grizzlies using the area, FWP initiated a study, conducted by Kasworm and Manley in cooperation with the USFWS and USFS, in the Cabinet Mountains in 1983. More recently, the USFWS, in cooperation with the USFS and FWP, initiated a long term study beginning in 1989. Objectives of the 1989 study have focused on (i)

testing grizzly bear population augmentation in the Cabinet Mountains to determine if transplanted bears will remain in the area of release and ultimately contribute to the population through reproduction and (ii) conducting research and monitoring efforts. During this time period, population estimates of grizzlies have been gathered from observations of bears and bear sign (tracks, digs, etc.), from capture and radio-collar operations, and from hair sampling for DNA analysis.

In order to determine if transplanted bears would remain in the area of release and ultimately contribute to the population through reproduction, a population augmentation program was initiated in the early 1990s. As part of this program, four young female grizzly bears, with no history of conflicts with humans, were captured in the Flathead River Valley of British Columbia and released in the Cabinet Mountains of northwest Montana. One of the transplanted bears produced a cub the following spring however, the animal had likely bred prior to translocation and did not satisfy the criteria for reproduction with native males. This female, and presumably her cub, died of unknown causes later that year. The remaining three bears were monitored until their collars fell off. Three of four transplanted bears remained within the target area for more than one year. In addition, in 2005, FWP transplanted an additional female.

DNA analysis is currently being used to determine the fate of the three remaining bears transplanted in the 1990s. The program utilizes genetic information from hair-snagging and remote camera observations to attempt to identify transplanted bears or their offspring living in the Cabinet Mountains. This project provides a minimum estimate of the number of bears inhabiting the area, sex ratio of captured bears, and relatedness and genetic diversity measures of captured bears. During 2004, hair from one of the three remaining translocated females was collected at a hair snag site and identified by DNA analysis. Preliminary results also indicate that this female has reproduced. Results are expected to be reported in mid 2006.

Using only animals identified during 1997-2004 (38) less known mortality (16), USFWS scientists suggest a population of at least 22 individuals. This estimate is conservative because study personnel observations alone would not likely sample all bears in the area, some sightings classified as the same animal may represent different additional animals, and the study has received several credible public reports of additional bears that are not included in this analysis. Since 1989 there have been credible sightings of bears in all 8 BMUs that make up the Yaak portion of the recovery area with sightings of females with young in 6 BMUs. About half of the credible observations of females with young in these BMUs did not appear to come from marked bears. The actual number of unmarked females represented is unknown. A population estimate of 20-30 grizzly bears for the entire Yaak portion of the recovery zone would appear reasonable.

The Cabinet Mountains population was estimated to be 15 bears or fewer in 1988. There is insufficient data to dramatically change that estimate, but since 1988 the population was augmented with 4 young females, and there have been credible sightings of individual bears in all 14 BMUs that make up the Cabinet Mountains with sightings of females with young in 7 BMUs since the completing of transplants. Based on these data, Kasworm and colleagues conservatively estimate the population of the CYE at 30-40 grizzly bears.

In summary, the current trend for the CYE appears to be that the population is declining slightly. Mortality levels in the populations and relationship of the population to recovery criteria presented in the 1993 recovery plan are presented in Tables 6 and 7.

Table 6. Cabinet-Yaak recovery zone grizzly bear population parameters including minimum unduplicated counts of females with cubs (FWCs) and known human-caused mortality, 1988-2004.[1]

Year	Annual Undupl. FWCs	Annual Human Caused Adult Female Mortality	Annual Human Caused All Female Mortality	Annual Human Caused Total Mortality	4% Total Human Caused Mortality Limit[1]	30% All Female Human Caused Mortality Limit[2]	Total Human Caused Mortality 6 Year Average	Female Human Caused Mortality 6 Year Average
1988	1	1	1	1	0	0	--	--
1989	0	0	1	1	0	0	--	--
1990	1	0	0	1	0	0	--	--
1991	1	0	0	0	0	0	--	--
1992	1	0	0	0	0	0	--	--
1993	2	0	0	1	0.9	0.3	0.5	0.3
1994	1	0	0	0	0.9	0.3	0.3	0.2
1995	1	0	0	0	0.9	0.3	0.2	0
1996	1	0	0	1	0.7	0.2	0.2	0
1997	3	0	0	1	1.2	0.4	0.3	0
1998	0	0	0	0	0.9	0.3	0.3	0
1999	0	0	0	1	0.7	0.2	0.5	0
2000	2	0	1	1	0.5	0.1	0.7	0.2
2001	1	1	2	2	0.5	0.1	1.0	0.5
2002	4	1	4	5	1.2	0.4	1.7	1.2
2003	2	0	0	0	1.2	0.4	1.5	1.2
2004	1	0	0	0	1.4	0.4	1.5	1.2

[1] Data from USFWS Grizzly Bear Recovery Plan (1993) and Cabinet-Yaak grizzly bear recovery area 2004 research and monitoring progress report (Kasworm et al, 2005).

[2] Presently, grizzly bear numbers so small in this ecosystem that mortality goal shall be minimal known human-caused mortalities.

Table 7. Status of the Cabinet-Yaak recovery zone during 1999-2004 in relation to demographic recovery targets from the grizzly bear recovery plan (USFWS 1993).

Recovery Criteria	Target	1999-2004
Females w/cubs (6-yr average)	6.0	1.7 (10/6)
Human Caused Mortality limit (4% of minimum estimate)	1.4	1.5 (6 yr avg)
Female Human Caused mortality limit (30% of total mortality)	0.4	1.2 (6 yr avg)
Distribution of females w/young	18 of 22	12 of 22

4. ISSUES AND ALTERNATIVES IDENTIFIED AND CONSIDERED

This chapter presents a discussion of the issues identified from the scoping process, and follow-up meetings, described earlier. Within each section the issue is discussed along with FWPs preferred approach (identified by the statements preceded by a ➢ at the head of each section) and any anticipated impacts and alternatives considered. Some issues presented here do not warrant specific actions. For those issues, no preferred or alternative approaches will be offered, and there will be no impacts described. This will be followed, in Chapter 5, by a discussion of alternative future program direction for each recovery zone as well as FWPs preferred program in each area.

FWP considered a "No Action" alternative for western Montana beyond continuing existing programs and approaches to grizzly bear management. Although a "No Action" alternative was selected as FWPs preferred approach for the NCDE, because the bear population will continue to expand under existing programs, we rejected this alternative for both the Cabinet-Yaak and Bitterroot ecosystems (see Chapter 5). Full recovery in the CYE would take too long and existing programs in the Bitterroot would fail to ensure adequate preparation should bears occupy this area in the future. Thus, failure to modify these two programs would reduce the opportunity for future bear population increases and result in unnecessary conflicts and elevated risks to grizzly bears and to the people of Montana and its visitors.

While FWP recognizes that this approach deviates from formats used in many environmental impact statements, it is the agency's belief that the chosen format makes the document more useful to the public and those interested in grizzly bear conservation. Before discussing the different issues and alternatives this plan addresses, it is important to keep the following overall perspectives in mind.

- The grizzly bear is currently listed as a threatened species and covered under the Endangered Species Act. As such, recovery of the grizzly bear is directed by the Grizzly Bear Recovery Plan and implemented by the IGBC. FWPs implementation of the management outlined in this state plan will be complimentary to, and coordinated with, the Grizzly Bear Recovery Plan and the IGBC. Programs will be cooperative in nature and FWP intends to continue working with other agencies, tribal authorities and private organizations during development and implementation.
- The plan must respond to changes as they occur and be open to public scrutiny and input.
- Public support and tolerance for grizzlies is the key to their long-term recovery and re-occupation of suitable habitats. This support is contingent upon local involvement and active local participation in plan development and implementation.
- Biological and social issues are interrelated, and no one part of the plan can function effectively without the others. For example, intentionally feeding bears is against the law and people who do so create enforcement problems, unnecessary bear mortalities, risks to human safety and property damage.
- This plan does not presuppose habitat problems exist with bear re-occupation, but instead approaches the issues with the perspective of making sure agencies and local people are involved and given sufficient tools to respond to management changes as the need arises.
- The key to a broader recovery lies in bears utilizing lands that are not managed solely for them but in which their needs are adequately considered along with other uses. The plan also recognizes the pivotal role private-landowner support will play in a broader recovery.
- Preventative measures are much better than simply responding to problems; however, a great deal is unknown regarding how bears will utilize some of the available habitats. Consequently, adequate responses must be available.

- Program development and implementation must be guided by the best scientific information available and continuing research needs to be an integral part of this plan. As such, the plan must be flexible in nature, allowing updated scientific data to be integrated and appropriate adjustments made over time.

A. CONFLICT MANAGEMENT

Humans and grizzly bears occasionally come into conflict in areas where they encounter one another. FWPs objective is to maximize human safety and minimize losses to property while maintaining viable populations of grizzly bears. Accordingly, preferred approaches to managing grizzly bear conflict in western Montana include:

- FWP will focus immediate conflict management action in areas already occupied by grizzly bears, i.e. Northern Continental Divide, Cabinet-Yaak, and surrounding areas.
- Major emphasis will be placed on educating people about safety measures and preventing conflicts.
- FWP will attempt to minimize the number of bears removed from the population as a result of conflict situations. This will also be the case if this population is de-listed.
- FWP will consider the actions and potential impacts of programs in Canada and Idaho when determining our response.
- FWP, in cooperation with land management agencies and the USFWS, will determine appropriate conflict status and response based on established Interagency Grizzly Bear Guidelines. Conflict grizzly bears will be controlled in a practical, timely, and effective manner. Location, cause of incident, severity of incident, history of bear, health/age/sex of bear and demographic characteristics of animals involved will all be considered in any management action.
- A cost-sharing program aimed at preventative work will be developed as a way of encouraging a variety of interest groups to work together with FWP to minimize problems and increase tolerance for bears.

Within western Montana, conflicts have increased as the bear population increases in both numbers and distribution. Such incidents vary greatly on an annual basis. Considering the number of people who live, work, and recreate in the region, it is important to note that overall there have been minimal conflicts. Nevertheless, conflict or "problem" bears that are not managed successfully may threaten support for the entire grizzly bear program. When bear problems are not adequately addressed, there are negative consequences for the individual bear, the public, and the reputation of grizzlies in general is damaged.

The focus of grizzly bear conflict management inside and outside the recovery zones will be predicated on strategies and actions aimed at preventing grizzly bear/human conflicts as well as providing a management framework that is quick to respond to conflicts when they arise. In addition, any management will be conservative and will continue to provide the female segment of the grizzly bear population with additional protections.

In some areas, successful cost-sharing programs are currently in place. An example is the partnership that exists between the FWP Foundation and the Wind River Bear Institute (WRBI). The WRBI receives vital support, including funding, from the FWP Foundation to implement its “Partners in Life” Program. FWP recognizes the importance of these partnerships and will continue to work to develop additional such programs.

Human Safety

Grizzly bears are large, powerful animals and, on rare occasions, can threaten human safety and life. Successful grizzly bear management will require minimizing threats to human safety to the extent possible. Accordingly, FWPs preferred approach includes the following:

- Bears that kill people in either an unprovoked or provoked situation will be removed from the population if they can be reasonably identified. If a female with cubs at side attacks and kills a person in an unprovoked situation, removal of the cubs from the population will be considered to prevent a learned behavior from being passed along. In this instance, FWP recognizes that the approach is more constrained than present guidelines.
- Bears displaying unacceptable aggression, or behavioral responses considered to be a threat to human safety, will be removed from the population as quickly as possible.
- Information on safety in bear country will be provided in all big game hunting regulations.
- FWP will seek expansion and enforcement of practical and effective attractant-storage requirements within western Montana.
- FWP will work with county governments and local garbage haulers to require and provide bear-resistant garbage containers for homeowners in bear country.

Threats to human safety cannot be eliminated totally. Individual bears can alter their behavior for reasons known or unknown and cause injury or death to people. People also make mistakes, which in turn can lead to conflicts with bears and increase risks to human safety. For example, one individual failing to secure human foods from bears can precipitate a chain of events that leads to a bear becoming ever more familiar with people and their dwellings. This elevates risks unnecessarily. Also, as time goes by without conflict, people can become complacent. It is through awareness of the risk, and by responding accordingly, that support for grizzlies in Montana can increase while minimizing the risks. If officials fail to respond adequately to concerns for human safety, local support for maintaining this species will erode.

As grizzly bears in western Montana expand into new habitats outside the recovery zones, they will be expanding into habitats that, in large part, are already occupied by people living, working, and recreating. With this expansion, the number of bear/human encounters will increase. These encounters could lead to injuries or death for both humans and bears.

Under Montana Statute 87-3-130 and under 50 CFR 17.40, a citizen may legally kill a grizzly bear while acting in self-defense if the bear "… is molesting, assaulting, killing, or threatening to kill a person…" In western Montana grizzly bears have been killed by individuals acting in self-defense. With the potential for increasing human/bear encounters, safety for both humans and bears becomes an important issue.

One purpose of this management plan is to minimize the potential for human-grizzly conflicts that could lead to injury or loss of human life, or human-caused grizzly mortality while maintaining traditional residential, recreational and commercial uses of the areas into which the grizzly is or may be expanding. There is a possibility that certain types of human use may require modification, restriction, or prohibition to protect people, individual bears, reduce conflicts, or manage critical habitats. This is the same program FWP uses for other potentially dangerous species such as mountain lions or black bears.

Although there are a variety of situations that can result in a human-grizzly conflict, the primary categories are: 1) food attractants -- improper food storage or sanitation in either a backcountry (hunter

camp, hiker or other backcountry recreationist), rural (farm/ranch, cabin, church camp, etc.) or urban setting (subdivision, town); 2) surprise encounters -- bears surprised in close quarters and acting defensively; 3) maternal defense -- females defending cubs; 4) food sources -- bears defending a kill/carcass etc.; 5) human encroaching on a bear's space – photographer and/or tourist approaching a bear close enough to elicit a defensive reaction; 6) bears responding to a noise attractant -- bears attracted to a hunter attempting to bugle or cow-call an elk, bears associating gunshots with a food source (carcass or gut pile), etc.

In summary, we acknowledge that in some instances these guidelines are more constraining than current guidelines; however this plan recommends that any bears that have killed a human be removed from the population if they can be reasonably identified and captured. While there are times where it may not be possible to determine this absolutely before management actions occur, FWP will use all available evidence from the incident to identify the bear(s) involved before removal.

Strategies to minimize or resolve human-grizzly conflict

Successful conflict management requires a multifaceted approach aimed primarily at reducing or eliminating human-bear conflict rather than simply responding to it. As such, strategies preferred to minimize or resolve human-grizzly conflicts include:

- Inform and educate the public
- Develop and enforce practical and effective attractant storage rules/regulation
- Use of deterrents and/or aversive conditioning methods
- Short term, localized access management (if needed)
- Management control

Inform and Educate

People living, working and recreating in portions of western Montana have been exposed to grizzly bears for decades (mostly in and around the NCDE and portions of the CYE). However, in other parts of western Montana, most individuals have less experience with grizzly bears. People in these peripheral areas will initially have a much lower comfort level relative to grizzly bears. In the past, bear safety information has often been based on fear of the bear, and it is apparent that some people do fear the grizzly bear. Other concerns are based on worries that the presence of bears in new areas would reduce people's freedoms and safety while they are residing, recreating and conducting economic activities.

Ideally, fear of the bear should largely be replaced by awareness or informed respect. Respecting bears and learning how to behave appropriately when around them will help maintain positive bear encounters for both people and bears, and reduce the likelihood of negative encounters. Education is the key. Bear safety information should be based on biology and behavior of the bear, how to interpret bear behavior, and how to prevent encounters. Information should address situations that cause the majority of human-bear conflicts: bear habituation to humans, bear use of human food sources, and close encounters. Bear safety information should be of a positive, non-alarmist nature and should target specific audiences -- hunters, hikers, recreationists, rural homeowners, livestock operators, rural communities, commercial interests (loggers, miners, resort operators), and others. Community involvement is also important in developing bear safety programs. FWP, and other agencies, will work in partnership with communities located in bear habitat to develop/promote programs that prevent human-grizzly conflicts. An example of the type of information available can be found in Appendix B.

FWP will implement an early warning system that may include public service announcements to alert people who live, work, and/or recreate in bear habitat when natural foods are scarce and risk of conflicts may be correspondingly high. During years of drought and poor food production, many grizzlies are forced out of secure habitat to lower elevations where they are more likely to come into conflict with people, livestock, and property (during such times, human-caused grizzly deaths are more than four times higher than in good food years). Special consideration should be given during poor food years to avoid conflicts and excessive mortalities, especially to females. FWP and other cooperators are currently implementing, and will continue to refine, a system to alert the public of higher risk of encounters during poor food years, and to redouble efforts to inform livestock operators, outfitters, and others of the need for careful conduct, including securing bear attractants to avoid problems.

Information will be delivered at FWP regional headquarters and license agents in a variety of ways including brochures, pamphlets, and guides made available to the public and via media presentations (i.e. newspaper articles, TV spots, "Montana Outdoors" magazine). Public displays and presentations (slide shows/talks presented to schools, communities, sportsmen groups, sportsmen shows, etc.) will be presented by regional information officers, grizzly bear management specialists, and other FWP staff as requested or needed to address problems which may develop. Much of this information will also be made available through the Internet via the FWP website (http://fwp.mt.gov/default.html). The International Association for Bear Research and Management (IBA) has produced a 50-minute bear safety video. This state-of-the-art video (*Staying Safe in Bear Country*) was written by bear biologists and is available to the public and for agency use from FWP.

Attractant Storage Rules and Regulations

Within western Montana, the USFS and other agencies (state, local, tribal) have implemented attractant storage regulations designed to minimize bear-human conflicts (Appendix C). These regulations are currently being reviewed and revised. These regulations should be applied to all public lands statewide where black and grizzly bears occur and should apply to anyone using these areas (loggers, miners, livestock operators, fire camps, mushroom and berry pickers as well as recreationists). FWP will seek to establish an MOU, or other appropriate agreement through the IGBC with the USFS and BLM, to expand the attractant storage order consistent with IGBC Guidelines (IGBC, 2005). FWP will work with the appropriate federal processes (NEPA, forest plan revisions, etc.) to assess the appropriate number and location of bear resistant food storage containers (bear boxes), meat poles, and bear resistant garbage containers (at all campsites) in order to protect bears while assuring wilderness values. FWP will involve local interests in expanding attractant storage orders to build necessary support and incorporate local knowledge and concerns.

On private land and in communities, church camps, resorts, and the like, people will be encouraged to use only bear-resistant garbage containers. In British Columbia, some communities have revised waste laws making bear-resistant garbage bins mandatory for residences and bear-resistant container enclosures mandatory for all businesses. As recommended in this plan, local groups are the appropriate avenue for addressing these concerns and developing necessary solutions. Communities will need to remain vigilant when dealing with food storage/waste storage problems. In our experience, these efforts are very successful. However, over time people may revert to behaviors that create problems. FWP will seek support from the Fish, Wildlife & Parks Foundation, as well as other foundations, to assist with these long-term programs.

Bear Repellents and Deterrents

Over the past decade considerable effort has been directed toward the development of non-lethal techniques for dealing with problem bears. Two promising techniques are repellents and deterrents. A repellent is activated by humans and should immediately turn a bear away during a close approach or attack. The most promising repellent is a capsaicin spray (i.e. bear spray). Several brands have been developed which have been used successfully to repel attacking bears. These products are for defensive purposes only, and, to be effective must be sprayed at the bear's face (the eye area). People working and recreating in bear habitat will be encouraged to carry bear spray. Information will be available as to what repellent products are available and how to use them properly. In addition, FWP will work with various private interests to make these more readily available (i.e. cost share, etc.) and provide training on proper use.

A deterrent should prevent undesirable behaviors by turning bears away before a conflict occurs. Where removal of an attractant isn't possible, electric fencing is an effective deterrent to prevent bears from accessing human food sources and other attractants (garbage, food storage areas, livestock boneyards, etc.). Rubber bullets, hard plastic slugs, propane guns and "critter gitters" will be used to educate bears to avoid a particular area, usually when a bear is attracted to a human food source or when a bear becomes habituated to human activities. Dogs will be used to deter bears from livestock and from backcountry work camps.

Aversive Conditioning

Aversive conditioning is non-lethal bear control used as an alternative to killing or relocating bears that become too closely associated with people. Aversive conditioning should modify previously established undesirable behavior through the use of repellents or deterrents. This conditioning must be repeated until avoidance of people or their property is firmly established. Primary goals of aversive conditioning are to (i) train bears to avoid people and their activities and (ii) inform people of ways to prevent bear conflicts. In recent years, the Wind River Bear Institute (WRBI) has developed the Partners in Life Program with a goal of providing for coexistence of humans and bears by preventing and reducing conflicts. The program uses highly trained Karelian bear dogs and biologists in combination with other deterrents (rubber bullets, cracker shell, etc.) to teach bears to change their undesirable behaviors. Problem bears are conditioned to avoid human use areas and the public is educated to behave in a manner that prevents bear problems and their reoccurrence. The program has been used successfully on both black and grizzly bears in Glacier National Park, Yosemite National Park, several Canadian parks, and on private and public land in northwestern Montana and southwestern Alberta. It should be noted that aversive conditioning is not always successful, and some individual bears will still occasionally need to be removed. FWP will continue to work with the FWP Foundation to provide funding to ensure grizzly bear conservation in Montana.

Management Control

Bears may become "habituated" to human activities (ignore nearby human activity) or become "food-conditioned" (consume human food or garbage or other attractants). While food conditioned bears do not necessarily become habituated, habituated bears often lose their fear of humans and consequently no longer avoid people. More importantly, habituated and/or food-conditioned bears are most often involved in injury or death to humans. To deal with these issues, FWP preferred approaches are as follows:

- If the bear is already habituated and/or food conditioned and is viewed as a threat to human safety, that bear would be removed (euthanized or relocated to a research facility/zoo).

- Any bear causing human injury or death while acting in a predaceous manner, will be destroyed as will any cubs at side accompanying a female.
- A bear displaying aggressive, but non-predaceous, behavior will not necessarily be removed, depending on the circumstances of the encounter and the sex, age and reproductive status of the bear.

Conflict bears that have not yet become habituated or food conditioned may be candidates for either: 1) trapping and on-site release accompanied by aversive conditioning, 2) on-site aversive conditioning without trapping, or 3) trapping and relocation. Relocation is the least desirable option; relocated bears often return or cause problems in another area and ultimately have to be destroyed. Recent data from the Yellowstone area, suggests, however, that bears that remain trouble-free for at least a year are less likely to cause future problems.

Livestock Conflicts

Livestock operations that maintain large blocks of open rangeland can provide many benefits to the long-term conservation of grizzly bears, not the least of which is the maintenance of open space and habitats that support a wide variety of wildlife, including grizzlies. At the same time, livestock operators can suffer losses from bear depredation. These losses tend to be directed at sheep and young cattle. In addition, honey bees are classified as livestock in Montana, and apiaries can be damaged by bears. Our ability to deal with such issues will, in large part, determine the overall success of our grizzly management efforts. Correspondingly, FWPs preferred approaches to managing livestock conflict in western Montana include:

- Management efforts will be directed at depredating animals.
- Wildlife Services (WS) will be the lead agency dealing with livestock depredation (see MOU Appendices D and E) and as recovery and eventual delisting occurs, we will seek to provide them with additional flexibility and ability to make day-to-day management decisions regarding resolving livestock conflicts.
- FWP will respond to conflicts in cooperation with WS. Ultimately, with successful recovery and delisting, WS will be the appropriate agency to handle livestock conflicts and will report their activities annually, as already occurs with black bears and other predators.
- FWP, in cooperation with WS and other agencies, will focus on preventive programs aimed at minimizing livestock conflict with priority toward those areas with a history of conflict or currently occupied by bears.
- FWP will review and adjust the guidelines for dealing with damage to beehives (Appendix E).
- FWP will work with beekeepers to provide electric fences for all apiaries accessible to bears, and FWP will re-evaluate the guidelines for bear depredation to beehives and modify if needed.
- FWP will encourage private funding for compensation of livestock loss.
- FWP will review the carcass redistribution program and make changes if indicated by that review.
- FWP will work with the livestock industry to evaluate the possibility of an insurance program for predator losses.
- Currently sheep and/or goats are being used for weed control. FWP will work with operators to ensure conflicts with bears are minimal through the use of herders, electric fences, dogs, or other tools as appropriate. There may be places where these programs may be inappropriate due to conflicts with bears, and FWP will recommend the use of "non-livestock" approaches to weed control in those areas.

Although livestock and bears share many landscapes in Montana, conflicts with livestock result in few bear mortalities. Currently, WS handles issues of livestock depredation, and FWP anticipates this will continue. FWP envisions the establishment of proactive collaborative working agreements with WS that focus future programs and efforts on conflict prevention where possible.

The agency envisions programs where landowners can contact FWPs grizzly bear management specialists for assistance with assessments of risks from bears and possible preventative approaches to minimize those risks. FWP will work to provide landowners, livestock growers and beekeepers with the appropriate tools (e.g. electric fencing, aversive conditioning, guard dogs) to minimize conflicts. In addition, FWP will work with federal and tribal authorities, NGOs and beekeepers to identify sources of funding to develop programs that provide private livestock operations with additional benefits (such as priority for easements or access to other FWP programs) if they implement preventive approaches and maintain opportunities for wildlife, including bears, on their private lands and their public-land allotments. Working with other agencies and interests, the possibility of transferring grazing leases from areas of high conflicts to other areas with willing landowners/operators is another option. In this way, the program and its benefits are focused on operators who make an effort to address concerns and issues that result from the presence of grizzlies.

As a long-term goal FWP will also seek to enclose all bee yards in areas accessible to bears with electric fencing. Electric fencing is very effective at deterring both black and grizzly bears, and use of this technique can significantly reduce problems and the need to remove bears. FWP will work with the livestock industry to identify sources of funding to accomplish this. The Natural Resources Conservation Service recently implemented a new grant program to fund electric fencing in the Blackfoot Valley. They also established a standardized all-species electric fence design for fencing projects. Additional efforts will be made to identify possible funding that could be used to support staff whose sole responsibility would be to develop/implement preventative programs. These personnel should also be available to any livestock operation when requested to assess potential depredation risks and identify possible solutions prior to any depredations.

Devices to protect apiaries, corralled livestock, chicken and turkey coops, and stored feeds may be provided by FWP to property owners for protection of agricultural products. Protective supplies include electric fencing, bear resistant containers, audible and visual deterrent devices, and aversive conditioning devices. FWP may form partnerships with WS, livestock operators, NGOs and land management agencies to promote livestock management techniques that reduce bear depredations. For example, some people request that dead livestock be removed from grizzly bear areas and there are programs available to do this in parts of western Montana. While there may be times this is appropriate, there are cases within the State where livestock that died due to poisonous plants, lightening, or other causes can provide food for bears in areas away from potential conflict sites. Recognizing this, FWP has a program to redistribute livestock carcasses on the Rocky Mountain Front and the Blackfoot Valley so they remain available to bears but in areas that minimize the potential for conflict. By assisting livestock operators and removing carcasses from areas around buildings or calving/lambing areas, potential conflicts with bears can be minimized. These types of programs will be evaluated for use within the other portions of western Montana and to ensure they are functioning as desired. Conflict management will emphasize long-term, non-lethal solutions, but relocating or removing offending animals will be necessary to resolve some problems. FWP will continue to promote the development of new techniques and devices that can be used to protect agricultural products from bear damage.

At the present time, private conservation groups in Montana assist in developing preventative approaches, and FWP will cooperate with them to address this issue. Defenders of Wildlife has already cost shared the purchase of electric fence to protect sheep and bee yards through their Proactive Carnivore Conservation Fund. Such cost share or cooperative programs will be a key component of any long-term solutions to these issues.

In any discussion of livestock damage, an issue that is frequently raised concerns offering compensation to livestock operators for their losses to bears. While FWP encourages private groups (notably Defenders of Wildlife through the Bailey Wildlife Foundation Proactive Carnivore Conservation Fund) to continue compensating operators, the agency prefers to take the approach of providing management flexibility to landowners as a long-term solution to preventing livestock conflicts and depredation. Providing operators the opportunity to develop proactive problem solving plans to respond to potential conflicts before they develop can build support for the long-term program of increasing bear numbers and distribution. Moreover, compensation relies on verification that may not be easily accomplished in Montana's multi-predator environment. It also requires assessment of value, which can vary greatly between individual animals (for example, not every cow has the same value), and it requires ongoing funding sources. Fundamentally, however, it deals with a problem after it has occurred.

If Montana can implement a program that affords landowners management flexibility within reason to prevent livestock-grizzly conflicts and with some constraints, FWP believes it will build broader public support. Groups interested in conservation of the bear will, however, need assurances that such flexibility will not jeopardize long-term survival or ongoing recovery prospects.

Property Damage

Bears can, and will on occasion, damage personal property other than livestock. For example, they may enter buildings, chew on snowmobile seats or tear down fruit trees. In fact, bears are highly attracted to almost any potential food source. Processed human food, gardens, garbage, livestock and pet feeds, livestock carcasses, and septic treatment systems are particularly attractive to bears near camps and residential areas, and are often the cause of human-bear conflicts. FWPs objective is to minimize, to the extent possible, property damage caused by grizzly bears.

- FWP will focus on preventive measures, including management aimed at elimination of attractants, and better sanitation measures; the agency's bear management specialists will work on these issues on both public and private lands.
- FWP will seek funding to continue the grizzly bear management specialist positions currently stationed in Missoula, Kalispell, and Choteau. The IGBC has also recognized the need to create additional positions in the Cabinet-Yaak and FWP will investigate funding positions within the Cabinet-Yaak and Bitterroot areas.
- FWP will evaluate the need for an insurance program for property damage, if bear-friendly guidelines are followed.

FWP will work to identify potential sources of attractants and will work with private property owners, recreationists, and government agencies to reduce the source of attractant with long-term resolution being emphasized and making attractants inaccessible to bears. When the attractant cannot be eliminated, FWP will provide technical assistance to protect the property and to reduce the potential for human-bear conflicts. Techniques to prevent damage may include aversive conditioning, physical protection (i.e., electric fencing), relocating or removing offending animals, and deterrent devices. FWP

will continue to encourage the development of effective non-lethal damage management techniques and equipment. FWP will cooperate with city, county, state, tribal and federal governments to develop model systems of managing attractants, provide incentives for property attractant management, and pursue penalties that result in compliance with attractant storage regulations.

In FWPs judgment, the key to dealing with this issue is the same as all conflict situations in that prevention is preferable to responding after damage has occurred. Teaching people how to avoid problems is fundamental to this approach along with rapid response if damage does occur. FWP will work to keep bears from obtaining unnatural foods or becoming habituated to humans. From a broad perspective, general conflict guidelines will be followed. FWP response to property damage will, however, also include those techniques currently employed through the Partners for Life program including the use of Karelian bear dogs and on-site aversive conditioning.

FWP will use programs such as "Living with Wildlife" to further these goals. "Living with Wildlife" is a grant program developed by FWP and funded by the Montana Legislature to promote the successful coexistence of people and wildlife in urban and suburban settings. The program will fund projects that emphasize local involvement, partnerships, cost sharing, innovation, prevention, and proactive solutions to human/wildlife conflicts. Although FWP administers "Living with Wildlife", other agencies, local governments, NGOs, and private citizens will develop and implement most funded projects.

Conflict Management Guidelines

Response to bear-human conflicts is prescribed by the Interagency Grizzly Bear Guidelines. FWP follows the protocols in the Guidelines and participates in interagency consultations on responses to bear-human conflicts. FWP will continue to abide by the Interagency Grizzly Bear Guidelines.

Successful co-existence and social acceptance of grizzly bears is largely dependent on prevention and mitigation of human-bear conflicts. The cause, severity, and appropriate response to human-bear conflicts often varies considerably from one incident to another, making a broad range of management applications desirable to wildlife managers. Outside of the recovery zones, greater consideration will be given to humans when bears and people come into conflict, provided problems are not the result of intentional human actions. Agency management of conflict bears will be based on risk management protocols that consider the impacts to humans as well as the impacts to the bear population, and will range from no action to lethal control. FWP will use an effective "rapid response" system for conflict bear determination and control, and will employ any technique that is legal, effective, and appropriate to manage the conflict (Appendix F).

Response Actions

1. No Action: FWP may decide to take no action when the circumstances of the conflict do not warrant control or the opportunity for control is low.

2. Aversive Conditioning, Deterrence, or Protection: FWP may employ various options that deter or preclude the bear from additional problematic activities (i.e., electrical fencing, bear proofing buildings or containers, etc.).

3. Capture: FWP will initiate capture operations when other options are not applicable or where human safety is a concern. Capture efforts will be initiated when they are practical, and in a timely manner.

Management agencies often resort to translocation to reduce human-caused mortality associated with problem bears. Relocating grizzly bears from human-bear conflict situations is often times a short-term solution to an immediate crisis because many bears return to the conflict site or continue problem behaviors where relocated. Survival of translocated bears is largely affected by whether the bear returned to the capture site; return rates were most affected by distance transported, and age and sex of the bear. Return rates decreased at distances ≥46 mi, and subadult females returned the least. Because of low survival and high return rates, transporting grizzly bears should be considered a final action to eliminate a conflict situation. However, transporting females must be considered a viable technique because some translocated females have contributed to the population through successful reproduction. Furthermore, if appropriate, captured bears will be radio collared and monitored after relocation.

4. Removal: Lethal control techniques will be employed when other options are not practical and a reasonable opportunity for removal exists.

Grizzly Bear-Human Interaction Risk Management Protocols

1. Provide conflict-avoidance information and education to people living, working, and recreating in grizzly bear habitat.
2. As appropriate, provide information to the public and land management agencies about current bear distribution, including relocations, food conditions, activity, potential and current conflicts, and behaviors (news releases, etc.). Land management agencies will be encouraged to contact their permittees with information that will help them avoid conflicts.
3. Monitor situations where the activities or behaviors of bears inhabiting areas increase the likelihood of conflicts.
4. Cooperate with livestock operators and land managers to develop strategies that minimize the potential for bear damage.
5. Cooperate with property owners, recreationists, and land managers to identify and resolve potential conflicts.
6. Preemptively relocate, aversively condition, deter, or remove bears when potential for conflict is high and other techniques are not applicable.
7. Relocate, adversely condition, deter, or remove bears involved in conflicts with humans, or property when other techniques are not applicable. FWP recognizes that euthanasia of bears cannot be undertaken unilaterally under current nuisance bear guidelines and will continue to work with USFWS to determine if, and when, such management is warranted.
8. Design occupancy and population objectives that reduce the potential for conflicts in specific grizzly management units.

Rapid Response Protocols

1. Within each appropriate FWP region (in this case Regions 1, 2, 3, and 4), personnel will be trained and equipped to handle conflicts.
2. Conflict reporting procedures will be made available to the public through personal contacts and a variety of media channels.
3. Appropriate state and federal agency personnel will be trained and equipped to manage conflicts under circumstances predetermined by FWP and consistent with each agencies jurisdiction and policies.

4. Property owners may be provided deterrent or aversive conditioning supplies when appropriate for management of specific conflicts.
5. In cooperation with WS, livestock depredation information and evaluation training will be available to livestock producers and their employees.
6. Timely response by FWP for property destruction will be implemented. Management actions will be determined based on the situation.

Development and implementation of a comprehensive information and education program designed for people who live, work, and recreate in grizzly bear habitat is essential to conflict prevention. Technical assistance, including information on preventative and aversive techniques will be available to property owners, outfitters, and land managers, and will promote successful co-existence and bear conservation. Specific information and education recommendations are addressed in the Information and Education Section.

In situations where bears occupy areas where the potential for conflicts are high (i.e. some subdivisions), FWP will preemptively and actively manage grizzly bears to prevent damage and provide for human safety. In the future, should recovery occur and the grizzly bear is delisted, when applicable, killing of conflict bears by affected property owners may be allowed through special authorization from FWP. However, any such mortality will be constrained by mortality limits established for the population. FWP would direct the disposition of any bear killed under any special authorization.

Criteria for Conflict Bear Determination and Control

Active grizzly management aimed at individual conflict bears will be required as part of the management program. Moreover, FWP aims to continue to collaborate and consult with other agencies and/or tribal authorities as part of the decision making process under the Interagency Grizzly Bear Guidelines. As per Interagency Grizzly Bear Guidelines, the following criteria (see glossary for conflict bear definitions) will be used when determining the appropriate response control to implement.

1. FWP, or its authorized representative, will investigate reported human-grizzly bear conflicts as soon as practical. FWP will initiate consultation with the affected parties or their representatives within 12 hours by phone or in person if possible.
2. Bears displaying unacceptable aggression or considered a threat to human safety will be removed from the population if appropriate under the Interagency Grizzly Bear Guidelines.
3. Bears displaying natural defensive behavior will be removed when, under the Interagency Grizzly Bear Guidelines, circumstances warrant removal and non-lethal methods are not feasible or practical.
4. Bears displaying food-conditioned, or habituated behaviors, or damaging property may be relocated, aversively conditioned, or removed based on specific details of the incident as per the Interagency Grizzly Bear Guidelines. Management authorities will make this judgment after considering the cause, location, and severity of the incident or incidents. FWP will inform the affected people of the management direction chosen.
5. Bears may be preemptively moved when they are in areas where they are likely to come into conflicts with humans or their property as per the Interagency Grizzly Bear Guidelines. Conversely, people may be temporarily excluded from an area if the situation has a high risk to the public, e.g. a carcass located on a trail that is being fed on by grizzlies.
6. Bears may be relocated as indicated in conflict guidelines or as FWP, in collaboration with other agencies, determines is appropriate, especially in years where mortality may be excessive in other areas. These may include on site relocations or short distance relocations.

7. Bears involved in chronic, significant, or have a high probability to cause significant or chronic depredations, will be removed as per the Interagency Grizzly Bear Guidelines when it is practical and in a timely manner.
8. Bears relocated because of conflict activities will be released in a location where the probability to cause additional damage is low. Authorities have and will continue to cooperate to provide adequate and available sites for relocations. Bears not suitable for relocation or release will be removed as per the Interagency Grizzly Bear Guidelines.
9. If appropriate, grizzly bears captured in management actions that are to be released into the wild will be permanently marked with a unique identifying tattoo, ear tag, or identifying chip and radio collared to follow their movements.

Disposition Criteria for Bears Removed in Management Actions

Captured grizzly bears identified for removal may be given to public research institutions or public zoological parks for appropriate non-release educational or scientific purposes as per state laws and regulations. Grizzly bears not suitable for these purposes will be euthanized. FWP will direct the disposition of all parts of a bear killed for any purpose. While listed under the Endangered Species Act, any such decisions will be made through consultation and in accordance with direction provided by the Interagency Grizzly Bear Guidelines in consultation with cooperating federal agencies.

Conflict Monitoring Protocol

FWP will maintain a database on conflicts and conflict bears to assist with predicting and/or preventing conflicts before they occur. All reported grizzly bear conflicts and subsequent FWP corrective actions will be documented and summarized annually. Annual reports will detail the cause and location of each conflict and management action. This will ultimately provide managers with a means of identifying where problems are occurring and allow for comparisons of trends to be made according to locations, sources, land ownership and types of conflicts.

Alternatives Considered

The following represents a list of alternatives and issues that were considered by FWP when laying out its preferred approach to grizzly bear conflict management for western Montana.

1. *If evidence exists that a person deliberately precipitated a bear attack that resulted in their death, for example by approaching and provoking a bear, the bear should not be removed.*

   Although this is considered an alternative, in FWPs judgment, allowing bears that have been known to kill someone to remain in the population will jeopardize local support and creates significant liability issues. With effective management programs there will hopefully be very few of these incidents.

2. *Livestock operators should be forced to absorb losses that occurred on public lands no matter what the cost.*

   In FWPs judgment, this approach fails to recognize the significant contribution of private lands, which provide important bear conservation benefits. In fact, in many portions of western Montana these same private lands are critical to the survival of the bear and to accommodating an expanded distribution of the population. If a permittee could not manage depredation risks on public lands, the converse is allowing them to eliminate risks (meaning bears) on their private lands. This either/or approach is not a productive solution to these problems. Additionally, this approach actually

significantly conflicts with the FWP objective of building public support necessary for expansion and long-term survival of bear populations.

3. *FWP should develop a livestock operator compensation program aimed at providing monetary payment to offset or replace the economic loss for a death or injury to livestock due to bear activity.*

   While FWP encourages private groups to continue compensation programs, the department is currently moving away from such programs. An exception to this relates to wolf management where a citizens committee recommended some form of compensation for livestock losses. As outlined previously, we believe that if Montana can implement a grizzly bear program when the grizzly bear is recovered that provides landowners management flexibility within reason and with some constraints (i.e. some provision for removing depredating bears) it will build broader public support.

4. *Bear habitats should not overlap with human residential areas and/or other areas frequented by people.*

   While FWP will address the problem of bears in residential areas with the programs outlined, to try and separate people and bears across western Montana would fail because bear distribution and densities would have to be so low that it would preclude the objective of maintaining a healthy bear population. In FWPs judgment, providing ways to accommodate both bears and people will ultimately be more successful.

5. *Provide unfettered flexibility to livestock operators and property owners to deal with conflict situations.*

   This is illegal under current listed status. Furthermore, in FWPs judgment, this approach will fail to provide the necessary assurances for long-term conservation. No other FWP programs for a managed species allows for flexibility without constraints.

B. HABITAT MONITORING AND MANAGEMENT

Providing for continued expansion of the grizzly bear population into areas that are biologically suitable and socially acceptable requires regional specific information on grizzly bear habitat requirements and use, current habitat conditions, and factors affecting habitat suitability such as human activity. Consequently, this management plan recommends coordinated consulting with land management agencies on issues related to grizzly bear habitat protection, disturbance, and mitigation as well as monitoring of major grizzly bear food sources. It is important to note that these efforts benefit many species in addition to bears. Preferred approaches include:

- FWP will work with other agencies to develop and implement a conservation strategy summarizing long-term commitments for grizzly bears in each recovery zone and other areas currently or likely to become occupied.
- FWP will work with land management agencies to monitor habitat changes in a manner consistent with its overall approaches for all other managed wildlife species.
- FWP will continue to cooperate with other members of the IGBC and the various managers subcommittees or similar group in a coordinated effort to collect and analyze habitat data.
- FWP, in coordination with other agencies, will monitor oil, gas, timber, mining and subdivision projects, and address grizzly bear needs in commenting on permitting processes.
- FWP will work with local groups to identify and promote habitat conservation that benefit bears such as maintaining core areas, security, or working with county planners in important habitat areas.

During the timeframe of this plan (10 years), grizzly bear expansion and population increase is initially expected to occur on lands in and/or adjacent to the recovery zones. Accordingly, FWP will focus its grizzly bear habitat management programs in areas that are adjacent to, and being reoccupied from the recovery zones within the NCDE and CYE. FWP will also begin to evaluate other areas that may be occupied with the ongoing expansion of the grizzly bear population and evaluate them for needed habitat conservation programs.

Habitat Security and Motorized Access

- FWP and cooperating agencies (e.g. USFS) will monitor and report on the cumulative effects of human activities on bear habitat, road access management, large scale habitat alterations, habitat easements and acquisitions, and significant Federal, State, and corporate activities as part of our program.
- Outside the recovery zones, FWP will recommend that land-management agencies manage for an open-road density of one mile or less per square mile of habitat. This is consistent with statewide approaches to management of multiple species, including elk.
- FWP will support keeping existing inventoried roadless areas in a roadless state and work with local groups and land managers to identify areas where roads could be reclaimed.
- FWP will work with the Montana Department of Transportation to address wildlife crossing needs on their projects. An MOU or other agreement may be developed to provide guidelines to enhance the ability of bears and other wildlife to cross roads.

The historic distribution of grizzly bears depicts a species with wide adaptive flexibility to the habitats it resided in. Without the influence of humans, the distribution and productivity of grizzly bears would likely be determined by the availability of food resources and the density of bears. This is not the present case; humans and bears interact at many different levels across the landscapes. As a consequence, it is necessary to continually monitor habitat values important to grizzly bears in addition to monitoring population parameters.

Radio telemetry studies have identified roads as significant factors in displacement, mortality risk and habitat fragmentation. For example, areas of adult female displacement by roads and development totaled about 16% of available habitat in Yellowstone National Park. Moreover, the percentage of habitat loss as a consequence of behavioral displacement from roads is a function of road density. The percentage is higher in areas having higher road density regardless of the distance at which roads affect bear behavior. In addition, bears living near roads also face a higher probability of human-caused mortality as a consequence of illegal shooting, control actions influenced by attraction to unnatural food sources, or by being mistakenly identified as a black bear by hunters.

Within the recovery zones, FWP will work with the USFWS through development of a conservation strategy to determine access constraints and requirements that need to be maintained. In addition, outside the recovery zones on public lands, FWP will seek to maintain road densities of 1 mile or less per square mile of habitat as the preferred approach. This goal seeks to meet the needs of a variety of wildlife, including species such as elk, while maintaining reasonable public access. If additional management is warranted based on knowledge gained as bears reoccupy areas, it should be developed cooperatively and implemented by local groups as suggested in this plan.

Motorized access also plays a significant role in limiting grizzly bear habitat use. The distance at which bears appear to be displaced by roads varies by area and season. Correspondingly, the impact of roads

on displacement from preferred habitats is greatest in spring. Furthermore, the level of traffic also appears to influence degree of bear avoidance of roads.

Security cover is another important component of habitat. Grizzly bear habitat can be impacted by a reduction of security cover as the direct or indirect result of natural phenomena such as fire, various human activities, and land management practices, including recreational development and primary roads, restricted roads and motorized trails, human use, oil and gas development, logging practices, and forest fires.

FWP recognizes the need to minimize negative impacts to bear habitats. Other than on FWPs own wildlife management areas, FWP does not have decision making authority on federal, State School Trust, or tribal lands. However, FWP works closely with these land management agencies to minimize negative impacts on fish and wildlife species. Additionally, FWP is considering grizzly bears in comments and discussions regarding land management activity in grizzly bear habitat, whether inside or well outside established recovery zones. Accordingly, FWP, in collaboration with other agencies, will monitor oil, gas, timber, mining and subdivision projects, and try to address grizzly bear needs by commenting on projects. Consideration and recommendations will be made based on the best scientific information available and take essential habitat requirements of the grizzly bear into account. In doing so, FWP will evaluate factors such as (i) human interaction and potential for grizzly bear mortality (ii) displacement from important habitats (iii) habituation to humans and (iv) ability of habitat to provide basic seasonal energy requirements.

FWP also recognizes that habitat changes, such as loss of whitebark pine or huckleberry crop failures, within the recovery zones could result in increased importance of habitats outside and will monitor and respond to those changes if they should occur. Likewise, there is the potential for bear habitat quality to be negatively impacted by the spread of noxious weeds. FWP believes that any such changes will be detected during the course of ongoing habitat monitoring and will respond appropriately by adjusting habitat management programs should these plants become problematic and begin impacting the bear population.

Food Sources

- If deemed appropriate, FWP, in cooperation with other agencies, will identify and monitor key food sources such as huckleberry or other berry production, moth aggregation sites, and ungulate populations.

Grizzly bears are opportunistic omnivores that are able to survive in a variety of habitats and utilize a range of foods. Major food sources utilized by bears inhabiting western Montana include a variety of vegetative foods, winter-killed large ungulates (e.g. elk, moose), and various berries including huckleberries. Existence and abundance of these food sources has been well documented in western Montana and monitoring of berry production (e.g. huckleberry, buffaloberry, serviceberry, and mountain ash) has taken place in the CYE since 1989. If scientific data indicate that monitoring of food sources is warranted, FWP, in cooperation with other agencies, will initiate monitoring of major grizzly bear foods toward berry production, army cutworm moths, and ungulate populations. If it appears that bear use of these or other food sources is threatened, threats will be addressed and monitoring protocols modified.

FWP envisions that monitoring efforts will be collaborative in nature and will work with appropriate federal, state and tribal authorities to develop programs aimed at surveying selected whitebark pine

stands and identifying army cutworm moth aggregation sites using existing methodologies. Whitebark pine stands will be identified and monitored for seed production, tree health (evidence of blister rust, *Cornartium ribicola*), and evidence of bear use. Ungulate populations will be monitored using data collected during FWP annual ungulate population and trend surveys.

Private Land Development

- FWP will continue to use statewide habitat programs to conserve key wildlife habitats in western Montana. These include voluntary conservation easements and other private land conservation efforts.
- FWP will monitor categories of private land development and subdivision.
- FWP will pursue programs that deal with limiting bear access to commercial orchards.

Efforts to conserve habitats in this portion of Montana will continue to be a departmental priority due to the ongoing threat of residential subdivision. FWP promotes the use of private land habitat initiatives. Most are funded through earmarked accounts and include Montana's Migratory Bird Stamp (dollars directed toward wetland riparian areas), Upland Game Bird Habitat Enhancement Program (dollars go primarily towards enhancing habitat via good management shrub/grassland communities), State Wildlife Grants (Sec. 6) and Habitat Montana. Specifically, Habitat Montana affords FWP the opportunity to conserve habitat on private lands via lease, conservation easements (purchased) or fee title acquisition. This voluntary program is not directed at specific species but rather at conserving Montana's most threatened habitats, i.e. wetlands/riparian areas, shrub/grasslands, and intermountain foothills. Habitat Montana funds have been used to conserve habitats across western Montana.

The intermountain valleys between major mountain ranges of western Montana are primarily private land. These private lands are vital to the area's agricultural economy and provide important habitat for a variety of fish and wildlife species. As agricultural land, they also provide a wide range of opportunities for wildlife to live and travel between mountain ranges. The landscape is also characterized by a mosaic of major highways which bisect these valleys. FWP reviews most subdivisions, applies land conservation programs like Habitat Montana, and works with Montana Department of Transportation on mitigating barriers to crossing transportation routes. In addition, FWP will continue to investigate and develop programs aimed at building tolerance for wildlife, including grizzly bears, on private land. This approach, currently used for grizzly bears and other species, is very effective and will be continued.

Agricultural enterprises, such as those surrounding Flathead Lake, can also impact bears by acting as attractants. Many orchards are currently fenced to exclude deer. FWP, together with agencies such as the Natural Resource Conservation Service, can work with commercial orchard operators on development and implementation of appropriate technologies for excluding bears and minimizing property damage.

Trails

Trail use may include both motorized and non-motorized access. While programs are currently in place that address maintenance and management of certain trail systems, concerns regarding appropriate use levels and potential resource impacts (e.g. water quality, soil erosion and wildlife impacts) exist. As recreational use increases, the potential arises for grizzly bears and their habitat to be impacted from disparate outdoor activities ranging from off-road snow mobile travel to user created trail systems, developed without appropriate planning. Taking into account the wide array of outdoor enthusiasts that utilize areas frequented by grizzly bears, FWPs preferred approaches will include the following:

- FWP, in cooperation with other agencies, will consider information on trail use in areas of potential concern both within and outside the recovery zones. In the absence of good data, management programs often tend toward extreme solutions. However, if trail use creates problems only at specific times, it may be possible to accommodate use at other times. Without season and intensity of use information, FWP will be unable to make such recommendations.
- All FWP trails projects in western Montana will be reviewed by area biologists and grizzly bear concerns addressed.
- Federal trails programs are currently being adjusted, and FWP is participating in and supporting those efforts. FWP will seek USFS and BLM support of its programs and data gathering.
- Adjustments to trail access and uses should be developed using both the best available science and local citizen involvement.
- FWP, in cooperation with other agencies, will evaluate snowmobile programs to ensure they avoid impacting grizzly bears during denning periods, including den entrance and emergence.

Changes are currently underway by land management agencies to address the issue of trails, trail management, off-road vehicle use, and the impact on wildlife, including bears. Many people, including sportspersons, recognize the need for change. Working with other management agencies, trails, including snowmobile trails, could be rerouted, seasonally closed, or closed entirely if impacts prove significant. Although this requires USFS planning changes, FWP, local groups and other interested parties will be active participants in the decision making process.

Effective July 1, 2001, motorized wheeled (i.e. excludes snowmobiles) cross-country travel is prohibited on National Forest lands yearlong. The purpose of this restriction is to protect riparian areas, wetlands, crucial wildlife habitat, threatened or endangered species, soils and vegetation, aquatic resources, and/or to reduce user conflicts. The policy affects any motorized, wheeled vehicle, but not snowmobiles. Under the new policy, motorcycles may use a single-track trail or road if it is open to motorized vehicles, but ATVs and other four-wheeled vehicles cannot use that single-track road or trail. Several exceptions will apply. Cross-country travel will continue to be allowed for military needs, fire suppression, search and rescue, or law enforcement vehicles in emergencies. Forest users can also drive cross-country to campsites within 300 feet of existing roads or trails, after locating their campsite in a non-motorized fashion. As part of the decision, national forests will identify areas where more detailed local travel plans should be developed. FWP, local groups, and other interested parties should be active participants in such plans.

In conjunction with the Montana State Trails Plan, FWP has developed a Programmatic Environmental Impact Statement (PEIS) on the State's public trails system to help analyze and improve two trail grant programs administered by the department. These programs include motorized and non-motorized trail funding available through the federal Recreational Trails Program and the State Off-Highway Vehicle Grant Program. The PEIS recommends that all trail activities be coordinated with a biologist to avoid unacceptable impacts to wildlife. This course of action is currently underway because changes in technology of off-road vehicles including snowmobiles have dramatically changed use patterns on public lands. For example, with the development of more powerful snow machines and more interest in the sport, snowmobile activity is increasing. Furthermore, new technology has provided more powerful equipment that allows users to reach areas considered inaccessible in the past. Access to den sites that may have been inaccessible to snowmobile travel in the past now warrant investigation. These issues are being addressed, and it is FWPs intention that the needed changes to federal land management programs to meet wildlife needs will also be developed and implemented with involvement of local citizens.

Habitat Monitoring Guidelines

Effective habitat monitoring for grizzly bears, both within and outside the recovery zones, will require a collaborative approach that includes input from all involved federal and state agencies and tribal authorities. Moreover, habitat monitoring protocols inside each recovery zone will be specified in a Conservation Strategy for each area. Acknowledging this, FWP anticipates that the following habitat parameters will be cooperatively monitored, collated with assistance from the Interagency Grizzly Bear Science Team, and reported annually. This will be used to determine changes in habitat quality and guide management decisions.

1. Habitat Effectiveness – FWP, in cooperation with land management agencies (e.g. USFS) will measure habitat effectiveness in each BMU or subunit by application of the best available system, which at this time is the Cumulative Effects Model (CEM). Habitat potential is the inherent value of the landscape in the absence of human activities while habitat effectiveness values portray the value of the landscape in the presence of human activities (e.g. roads, timber harvest, mines and subdivisions). Subtracting habitat effectiveness from habitat potential gives the realized or actual value of the landscape to bears. This can be determined using GIS technology.

2. Road Standards – Forest Service road management standards will be monitored and reported for each BMU. These may include: total road density, open road density and percent secure habitat.

3. Easements and acquisitions – various agencies and private foundations work to secure conservation easements and acquisitions in western Montana. These serve to improve habitat quality for grizzly bears and an annual report will be submitted detailing these activities.

4. Wildfire activity – wildfires dramatically alter the vegetation and habitat mosaic of grizzly bear habitat. Changes in habitat due to wildfire are generally considered to be long term improvements in the overall habitat condition. Wildfire activity will however be reported annually.

5. Significant legal or agency activities related to habitat condition – state, federal and corporate land management activities have the potential to affect grizzly bear habitats. Significant habitat management/alteration/improvement activities within the NCDE and CYE will be reported annually. This will include, for example, brief summaries of forest plan revisions, litigations, notices of decisions on logging or oil and gas leases, environmental impact statements and grain spills from trains.

6. Private land development – categories of private land development will be monitored. This information will be used to direct management and outreach efforts aimed at minimizing human-bear conflicts. It will also provide a means of guiding FWP, and other organizations, in efforts aimed at securing conservation easements.

Habitat Management Guidelines

The general approach FWP pursues when dealing with habitat issues is summarized by the following statement: FWP seeks to manage all fish and wildlife habitat on public land, whether roaded or unroaded, as valuable and unique lands that will remain open to hunters, anglers, and other public users. Accessibility to public lands will be balanced with the year-round requirements of fish and wildlife (habitat, clean water, food, shelter, open space, and disturbance management), while maintaining a

functioning road system, including keeping inventoried roadless areas roadless (with science-based exceptions made for forest health, restoration, and other national needs).

By implementing such a program we can maintain grizzly bears while still providing for other appropriate uses. Reasons for the decline of brown/grizzly bears in North America are excessive human-caused mortality and habitat loss. Habitat loss results from factors such as conversion of native vegetation to agriculture, depletion of preferred food resources (i.e. whitebark pine and huckleberries), disturbance, displacement from human developments and activities (roads, mines, subdivisions), and fragmentation of habitat into increasingly smaller blocks inadequate to maintain viable populations and connectivity.

The following general management guidelines are applicable coordination measures. While FWP recognizes the need to append habitat standards to USFS plans and to NPS and BLM management plans for the recovery zones, these general guidelines should be considered when evaluating the effects of existing and proposed human activities in identified seasonally important habitats for a variety of wildlife species including grizzlies on federal and state lands.

1. Identify and evaluate, for prioritized projects proposal, the cumulative effects of all activities, including existing uses and other planned projects. Potential site-specific effects of the project being analyzed are a part of the cumulative effects evaluation which will apply to all lands within a designated "biological unit". A biological unit is an area of land ecologically similar and includes all of the year-long habitat requirements for a sub-population of one or more selected wildlife species.
2. Avoid human activities, or combinations of activities, on seasonally important wildlife habitats that may result in an adverse impact on the species or reduce the long-term habitat effectiveness.
3. Base road construction proposals on a completed transportation plan which considers important wildlife habitat components and seasonal-use areas in relation to road location, construction period, road standards, seasons of heavy vehicle use, and road management requirements.
4. Schedule road construction times to avoid seasonal-use periods for wildlife as designated in species-specific guidelines.
5. Locate roads, drill sites, landing zones, etc., to avoid important wildlife habitat components based on a site-specific evaluation.
6. Roads that are not compatible with area management objectives, and are no longer needed for the purpose for which they were built, will be closed and reclaimed. Native plant species will be used whenever possible to provide proper watershed protection on disturbed areas. Wildlife forage and/or cover species will be used in rehabilitation projects where appropriate.
7. Impose seasonal closures and/or vehicle restrictions based on wildlife, or other resource needs, on roads that remain open and enforce and prosecute illegal use by off-road vehicles if given authority. FWP will actively work to secure authority (current authority deals only with hunters and fishermen) through the appropriate process and identify funding to support enforcement efforts.
8. FWP supports the USFS and BLM restrictions banning all motorized off-road/trail use.
9. Efforts will be directed towards improving the quality of habitat in site-specific areas of habitually high human-caused bear mortality. Increased sanitation measures and seasonal road closures could be applied.
10. Continue effective cleaning and removal of corn/grain spills from train derailments and truck wrecks.

Habitat Guidelines for Grizzly Bears Currently in Place in Western Montana

Management direction, standards, and guidelines for the grizzly bear in western Montana are currently found in numerous documents. Standards, guidelines, and other direction contained therein are currently being applied in various geographic areas and under various land ownership and administration throughout western Montana. These guidelines, incorporating current habitat security attributes, and plans represent the best management practices for planning and implementing multiple use activities within certain portions of western Montana and have led to the expansion of the grizzly bear population. These plans will be used as the basis for coordinating multiple use activities or developing regional grizzly management plans into the future.

Many of the planning documents are subject to amendments and/or undergo periodic formal reviews and revisions. These processes allow the plans to incorporate most recent information and scientific findings. If amendments or revisions of the plans occur, such changes should not compromise the intent of the guidelines as they now exist to conserve grizzly bear habitat security. A summary of these plan guidelines can be found in Appendix G.

Alternatives Considered

1. *Expand the higher level of habitat restrictions and programs currently in place, or which will be agreed to, for the recovery zone to bear-occupied areas outside the recovery zone.*

   Ongoing expansion of bears outside the NCDE recovery zone shows that this approach is not necessary. Furthermore, it would not generate social acceptance for the bear and its further recovery. Incorporating the grizzly as another component of FWPs ongoing programs for all wildlife is a more productive approach. In addition, the approach outlined in this plan does allow FWP to modify the program, if necessary, and adapt the program in the future as more is learned.

2. *Bear specific trail and road restrictions need to be dealt with prior to re-occupation*.

   This approach would result in unnecessary impact to user groups without clear evidence of a problem. FWPs efforts on this issue are intended to build higher levels of social acceptance across user groups while still providing the necessary mechanisms to respond should problems occur.

C. POPULATION MONITORING AND MANAGEMENT

Quantitative data on grizzly bear abundance, distribution, survival and mortality are critical to formulating successful management strategies and decisions. Moreover, this information is necessary to evaluate the recovery process. FWPs preferred approach will therefore focus on developing a science-based population monitoring program that provides the information necessary to successfully manage bears in western Montana. Accordingly:

- FWP will conduct monitoring research in cooperation with other entities to obtain more detailed demographic and population trend information where needed.
- Monitoring will be coordinated with other states and provinces and information collected as part of a cooperative effort that will be presented in annual reports.
- Capture and immobilization of grizzly bears for population monitoring will be undertaken with veterinary input and will utilize best available scientific knowledge.
- This effort will be conducted by, and coordinated between FWP staff including the veterinarian, wildlife biologists and bear management specialists, with assistance from the IGBC.

- Population trend, in combination with habitat conditions, demographics, human/bear conflicts, social tolerance, and research findings, will be FWPs guide to decisions regarding population management.
- Results from the 2004 USGS NCDE Grizzly Bear DNA project will assist FWP with bear population size estimation, distribution and population trend from that point.
- FWP will monitor a representative sample of 25 or more adult females in the NCDE to establish population trend and develop monitoring protocols for the CYE and Bitterroot ecosystem as those populations recover.
- FWP will monitor mortality including timing and causes and gather survivorship data in cooperation with other agencies.
- FWP will use verified sightings to document changes in bear distribution. They would include DNA samples, photographs, sightings by reliable observers, tracks, and more.

Each recovery zone contains the minimum seasonal habitat components needed to support a recovering grizzly bear population. Recovery zones are further divided into smaller bear management units (BMUs) which afford greater resolution for purposes of habitat and population monitoring.
Analysis units will be established outside the recovery zones. These units will be used to collect and analyze demographic and occupancy data on grizzly bears by geographic area. FWP anticipates these units will be mountain ranges or groups of ranges similar to those currently used for black bear management. However, if information from bears outside the recovery zones indicates a change is required, the units will be modified as needed. These units will be created solely for the collection of demographic data and will not of themselves generate any new habitat restrictions.

Monitoring Framework

- FWP will conduct population monitoring using the best available scientific methods, while taking costs of monitoring efforts and funding availability into account.

In order to maintain consistency in data collection and compare grizzly bear population parameters inside and outside the recovery zone, monitoring protocols will be similar, although the sampling may vary depending on the survey area. Population trends and estimates developed using the best available scientific data will be used to set mortality thresholds for all human-caused mortalities.

The recovery criteria set forth in the Grizzly Bear Recovery Plan specify that counts of female grizzly bears with attendant cubs should be determined. It is, however, much easier to observe grizzly bears in the GYE than in the NCDE or the CYE because of the presence of drier, open-canopied habitats. As a consequence, this technique is unlikely to provide accurate data with which to assess recovery efforts in western Montana. Thus, while monitoring of female survivorship, unduplicated females with cubs, or unduplicated females with young may be used as an index to assess population trend or abundance over time, other estimates will also be required to accurately gauge recovery.

Population Size and Distribution

Radio-marking techniques used to estimate population size are not broadly applied because of the expense associated with capturing bears within heavily forested habitats where sighting bears from an aircraft can often prove difficult (much of Western Montana). Many researchers in Canada and the U.S. are focusing on "hair-snaring" techniques to estimate number and density of grizzly bears. With this procedure, bears are attracted to sampling stations with a scent lure. At each sampling station, barbed wire is strung between trees and when the bear passes under the wire, a small tuft of hair is snagged. The

follicles from these hair samples contain DNA, which can be used to identify individual animals. This technique is conceptually similar to techniques developed to identify bears based on photos taken when bears trip cameras. Advantages of the DNA and camera techniques include reduced need to mark bears or see them from aircraft. However, these techniques are labor-intensive and expensive. In Glacier National Park, USGS researcher Kate Kendall has conducted the most extensive effort to date to estimate grizzly bear abundance using hair-snaring and DNA analysis. This approach has expanded to include the entire NCDE. Although her research is still ongoing, she has identified a minimum number of different individuals (>200) in Glacier National Park and immediate vicinity that is larger than previously suspected.

Density estimates frequently have problems associated with differential inclusion of age or sex groups. Because newborn cubs have high mortality rates, estimates made early in the year will be larger than estimates made later in the year for the same population. Closure problems may result in overestimation of males, the more mobile sex, in a density estimation area. FWP, when attempting to estimate bear density, will be aware of these sources of potential bias and specify which sex and age groups occur in density estimates. With DNA hair-snaring techniques, efforts are made to exclude cubs by setting the barbed wire too high to snag their hair. Regardless, some cubs leave hair samples behind, and some bears greater than 1 year old may be able enter under the barbed wire without leaving hair. The age of a bear is not revealed by DNA analyses. The capture-mark-re-sight technique used in Alaska avoids most of these problems, but is useful only in areas where bears may be readily seen and may be difficult to apply in habitats with a forest overstory.

Trapping and radio collaring techniques provide necessary data on grizzly distribution, movements, and home ranges. Data collected will include estimation of seasonal, annual, and lifetime home ranges, identification of important seasonal habitats and foods, potential travel or linkage corridors, mortality estimation, extent of occupation, and denning sites. Distribution of bears will be determined by using any or all of the following methods: hair corrals, observation flights, telemetry flights, conflict activities, and verified sightings.

Population Trend Monitoring

Survivorship data will be obtained via aerial, satellite, and ground telemetry of radio-collared bears. These data are used to determine average life expectancy by sex and age class, causes of mortality, etc., for bears that inhabit different portions of the ecosystem. All suspected human-caused mortality will be investigated by FWP personnel to determine cause of death. These mortalities will be recorded and the information used, along with other mortality data, in the management of the population. This survivorship information will be fundamental to addressing the issue of the potential differences in survivorship of grizzly bears in the recovery zones, where there are extensive habitat protections, versus bears that live on multiple use areas outside the recovery zones.

Population Monitoring Guidelines

FWP recognizes that any one factor cannot provide the needed information to assess population status and trend. Ultimately, assessments will require multiple sources of information. In order to affectively assess the status of the grizzly bear population in western Montana, the following will therefore be monitored and reported annually. These data will provide a means of assessing population health, determining population changes and will guide management decisions.

1. Population size monitoring – assessing the status of the grizzly bear population will be critical to gauging recovery efforts. Although direct monitoring of the total number of bears is not feasible, results from the NCDE DNA study will provide an accurate assessment and estimate of the grizzly bear population for 2004. After such time, if adequate funding is not available, density estimates may be used as indices to gauge population change relative to the 2004 estimate.

2. Trend monitoring - the benchmark estimate of population size through DNA techniques will not be the only population index required to judge recovery under the ESA. Estimates of population trend using critical population parameters can yield the rate of change in a population and proximate causes for the change. FWP has already initiated a population trend program that focuses on determining the fate and reproductive status of female grizzly bears in the NCDE. The goal of the program is to maintain a representative sample of 25 or more female grizzly bears fitted with radio telemetry collars that are well distributed throughout the ecosystem. Objectives include (i) monitoring survival and reproductive rates of females to determine population trend (ii) monitoring distribution of bears inside and outside recovery zones (iii) collecting and providing information on management-orientated aspects of grizzly bear ecology (iv) summarizing conflict management activities to help managers interpret population size and trend indicators.

   In addition to data from the 25 or more collared females, the following will also be gathered as part of the trend monitoring program:

   i. Female-young monitoring – while difficult to observe in western Montana, sighting records of unduplicated females with cubs will be collected and organized annually.

   ii. Grizzly bear mortality - mortalities will be investigated and cause of death determined from field investigations and through forensic work. DNA samples will be collected from all dead bears. Both known and probable mortalities will be used to set mortality thresholds.

   iii. Conflict management – conflict management will be summarized annually and trends used by managers to help interpret population size and trend indicators.

3. Health assessment – disease surveillance will be conducted as part of an ongoing effort to determine the health status of the grizzly bear population. This will include analysis of blood and fecal samples as well as parasite prevalence.

Population Management Guidelines

As stated previously, we recognize that no one factor can provide all information necessary to assess population size and trend. Ultimately any assessments will result in some level of estimation and extrapolation for management purposes. This is the same approach FWP has used successfully for many other species of wildlife. To assure that our assessments of population size and trend are adequate, we will review the following in making our judgments.

1. Laws and regulations may have major influences on the bear population and FWP will evaluate both state and federal changes. For example, revised or updated travel and forest plans have the potential to affect bear conservation as road closure policies will influence the number of grizzly bears susceptible to mortality.

2. A systematic method to survey public and professional sectors and their perceptions of population trends may be developed.
3. Public opinions and perceptions from annual tentative hunting season regulation meetings will be solicited and evaluated.
4. Results from population and habitat research will be consulted. Specific changes in age structure, unreported mortality from marked bears, population densities, habitat use, and habitat quality will be considered.
5. Northwest Montana's grizzly bears are linked to those in Canada and Idaho and as a consequence, land use changes in those states will be monitored. Management policies will also be evaluated in relation to FWP policies. If excessive mortality is occurring in a neighboring state or province, the FWP program will be adjusted to ensure survival of the population, and FWP will work with that state or province to reduce mortality.
6. Changes in the population status in Glacier National Park and on tribal lands will be gathered through discussions with the appropriate management agency.
7. Realized or perceived changes in the price of grizzly bear parts will be evaluated. Such changes may affect the level of profiteering.
8. An attempt will be made to document grizzly bear range expansions or contractions through data gathering. This data will help evaluate changes in the population status.
9. Based on all available evidence, changes in management areas or management unit boundaries will be evaluated.
10. The number of control actions will be determined annually. If a trend becomes apparent, then the program will be re-evaluated and adjustments made to ensure the population is not being excessively impacted. The number of transplants from, or into, the ecosystems will be documented.
11. Evaluation of mortality statistics will be conducted. It is recognized that not all bear deaths are detected and recorded. FWP will, however, try to be as complete as possible. The following mortality statistics are of particular importance:
    a. Male/female sex ratio.
    b. Evaluate age structure of the harvest: ages should be calculated separately for males and females.
    c. Determine total mortality: trends in total number of bears should be evaluated in conjunction with other population estimates and/or statistics to determine if changes in mortality quotas are needed. It is anticipated that human caused mortality quotas will be conservative at 4% or less of the total population on a 6 year running average with no more than 30% females to allow for continued increased populations. This recommendation is based on the Grizzly Bear Recovery Plan, on past experience with grizzly bear management in northwestern Montana as reported in the Programmatic EIS for that area and subsequent updates.
12. Annually monitor, record, and evaluate litter sizes throughout the ecosystems by cooperative ground surveys, aerial surveys, and from the trend monitoring sample of 25 or more adult females marked with radios.
13. FWP will evaluate hunter effort if a hunt occurs. Changes in hunter effort, location of hunt, etc., will substantially aid interpretation of population statistics.
14. FWP will evaluate and implement ways of reducing mistaken I.D. and accidental killing of grizzly bears by black bear hunters through education and public outreach programs.

Future Distribution

FWP expects grizzly bear distribution to continue to increase. Preferred approaches to managing movement of grizzly bears into new areas include:

- FWP views habitat linkage as providing opportunities for bears to naturally reoccupy suitable, but unoccupied habitat, and will continue to work with Idaho, Canada, and the IGBC to address this issue.
- Areas of potential focus to address linkage problems with movement of bears are the Bitterroot and other intermountain valleys in western Montana, including the Evaro area, Highways 2, 93, and 200 and Interstate 90.

Current data indicate that the distribution of bears in western Montana is increasing. The most recent review of the distribution of grizzly bears in western Montana, conducted by the IGBC, demonstrated occupancy well beyond the recovery zones (see Figure 2). These boundaries should, however, be interpreted as an approximation, and additional supportive evidence should be considered when making judgments about occupied habitat near the edge.

Based on current programs, both within and outside the recovery zones, it is expected that range expansion will continue during the period covered by this plan. FWP recognizes that distribution changes beyond the recovery zones as well as adjacent habitats may occur at a somewhat slower pace. It is FWPs intent, however, to implement this management plan so that expansion in distribution will continue. If the expected increase in distribution does not occur, FWP will consider translocation of non-conflict animals into suitable habitats to support distribution increases. In accordance with Montana statute (MCA 87-5-711), prior to any such decision the Commission would determine if such management action was warranted, based upon scientific investigation and after a public hearing. This approach is consistent with that used for all of the species FWP manages.

There is currently a great deal of discussion and work aimed at addressing and defining "population linkage." The potential for this to occur is demonstrated by various assessments of habitat, which are ongoing and, evidenced by the information our agency provides the public on areas, where even today there is the possibility of encountering a grizzly bear (Figure 10).

The IGBC has created three linkage-zone task forces to further address this issue. Generally, a linkage zone is an area between two areas of habitat where animals can live at certain seasons and where they can find the security they need to move between these areas. Linkage zones are broad areas of seasonal habitat where animals can find food, shelter, and security. The long-term health of populations of carnivores will benefit from linkage and population interaction at broader levels. These linkage areas can likely serve multiple carnivore species as well as other wildlife species such as ungulates. Dramatic changes are currently occurring in the remaining possible linkage areas due to ongoing human development and the time to maintain connection opportunities in some areas is growing short. A linkage zone, however, is not a "corridor".

A corridor implies an area just used for travel however movement between ecosystems by carnivores rarely if ever occurs this way. For carnivores to move between ecosystems, they require habitats that can support their feeding and behavioral needs in these adjacent areas. As such, linkage zones are areas that will support low-density carnivore populations often as seasonal residents. Several models attempt to address this issue. These include, for example, those developed by the American Wildlands "Corridors of

Life" and Craighead Environmental Research Institute as well as by the USFWS. These models use Geographic Information Systems (GIS) to predict the broad areas of highest potential for linkage between habitat units for various carnivores. Each model has different assumptions. The main assumption of the USFWS Linkage Zone Model is that human activities determine wildlife distribution in disturbed areas. This model uses road density, human developed sites (i.e. houses, campgrounds) and the influence zone around them, presence or lack of vegetative hiding cover, and presence of riparian zones.

Linkage zone models are used to predict where grizzly bears and other wildlife species, particularly large carnivores, are most likely to successfully cross between large blocks of public land in the northern Rocky Mountains. These predictions are based on the assumption that movement is most likely to be successful where human activity is least. This does not mean that grizzly bears and other species will not try and cross other areas. The linkage zone concept is based on maintaining and enhancing movement possibilities in areas where such movement is most likely to be successful. A critical element of linkage zones is the pivotal role that private landowners will play in maintaining these areas. Clearly, all agencies, including FWP, must work together to meet landowner needs and engage them in these programs. Linkage programs already in place include FWPs Habitat Montana and Wildlife Mitigation programs which focus on easements and acquisitions. Other vitally important programs focus on work with local land trusts on smaller easements.

Figure 10. Current and potential grizzly bear distribution in Montana. Light gray = areas occupied by black bears. Dark gray = areas with the potential to encounter grizzly or black bears in Montana.

It is FWPs long-term goal to allow the populations in western Montana to reconnect by occupying currently unoccupied habitats. FWP anticipates that successful implementation of this plan, along with adequate local involvement, can allow this to occur. In the near term, FWP intends to address those land-use patterns that promote or hinder bear movement. Focus areas currently are the Evaro Hill area, the St. Regis area, and intermountain valleys. FWP currently uses habitat programs in these areas to provide for wildlife needs and anticipates additional efforts with the Montana Department of Transportation to

address issues of wildlife movement across roads (especially Interstates 90; and Highways 2, 200, and 93). FWP will also assess proposed Forest Highway Projects in that they have the potential to negatively impact future linkage of many wildlife populations. FWP will also work with landowners, local land trusts (e.g. Five Valleys, Montana Land Reliance, The Nature Conservancy) and private interests to promote programs that provide for wildlife access to private lands. In summary, FWPs goal is to expand recovery in western Montana.

Alternatives Considered

1. *Only collect and utilize population data in a manner that provides precise population estimates.*

   While the current DNA study will achieve this, we don't believe such an effort will occur on a regular basis. For a slowly reproducing species like grizzly bears in which even a maximum lambda (a measure of population trend) will always be close to 1.0 (meaning the populations don't fluctuate greatly on an annual basis), it will seldom be possible to have a 95% confidence interval that does not overlap 1.0. However, in FWPs judgment, using the weight of multiple indices collected in different ways and multiple sources is a more practical and meaningful approach for assessing population response to management. Population trend data will be FWPs primary guide to management decisions.

2. *Limit grizzly bear distribution to the recovery zones.*

   This approach is logistically impossible and biologically undesirable. In order to maintain resiliency in the population to changes in habitat, tolerance levels and other factors, bears should occupy a broader landscape. Also, bears cannot be confined to the recovery zones because there are no barriers to contain them and it is impossible to know the location of every animal all the time.

D. HARVEST MANAGEMENT

Regulated hunting continues to play a significant role in shaping successful wildlife conservation strategies for many species throughout Montana. As part of a comprehensive grizzly bear management program, our goal is to allow for limited regulated harvest upon delisting of bears implemented within a scientifically sound framework that maintains a viable and self-sustaining population. Accordingly, preferred approaches will include:

- Limited and regulated harvest of grizzly bears will be a part of Montana's long-term conservation program.
- Any hunting program will be designed and implemented using the best available scientific knowledge.
- It will be coordinated with surrounding states and provinces to avoid excessive mortalities.
- It will be open to public review, similar to the processes used for managing other species in Montana.
- The female segment of the population will be given additional protections in any proposed hunting program. For example, the killing of females accompanied by young will be prohibited. Timing of seasons will also be used to reduce female mortality.
- Regulated hunting will be used as one tool employed to garner additional public support and ownership thereby aiding in long-term survival and reoccupancy of habitats.
- If opportunities should arise to expand recovery, FWP is committed to utilize all or a portion of any harvestable surplus through live removal and relocation of bears to other areas within or outside Montana.

The State of Montana's grizzly bear management program uses hunting as one tool among many in promoting the long-term conservation of the grizzly bear. Any regulated public hunt must therefore be evaluated in the context of the entire bear management program and its efforts to promote management and ongoing recovery of this species. Harvest recommendations and/or programs will be conservatively applied, and only after the best available scientific data indicate that the population can sustain a predetermined level of take. Moreover, all mortalities from hunting will be counted against mortality limits and hunting of females with young will not be allowed.

It is important to make the distinction between regulated removal and the unregulated mortalities that occurred in the past. Unregulated hunting can, and often does, lead to dramatic population declines. Such was the case at the turn of the 20th century when bears were persecuted and killed without provocation, license, limit, or season, and in excessive numbers. Current managed and regulated hunting programs can, however, promote population increases and recovery for all species. Hunting mortalities can be directed at areas with high human-bear conflicts and thereby reduce bear numbers and conflicts in such peripheral areas. Furthermore, wildlife populations typically produce surplus individuals and off-take quotas are frequently developed in such a way that the population still increases. In designing a regulated harvest program, Montana also recognizes that managing wildlife populations that range across jurisdictional boundaries is challenging, but especially so when different management goals are identified on either side of a boundary. In order to avoid excessive mortalities, FWP will work closely with surrounding states and provinces and incorporate data from these regions when determining harvest quotas.

FWP recognizes that hunting impacts population composition in different ways and will institute regulations to afford greater protection to the female segment of the population. In central Alaska, for example, females constituted 18% of the spring season hunter kill prior to May 1, but more than 40% of the harvest after the third week in May. In the fall, females represented 53% of the kill during the first week of September, but less than 43% of the kill during October. Thus, in early spring, hunters primarily kill males because they are the first to emerge from dens, while females accompanied by newborn cubs are the last to emerge from dens. Similarly, males are the last to enter dens in the fall, and late fall season hunts typically harvest a higher proportion of males. By instituting strict timing and season regulations, male bears would be more vulnerable to hunters than female bears. Furthermore, males tend to range more widely and as a consequence are more likely to encounter areas frequented by hunters.

Additional safeguards could also be implemented. In Alaska and Canada, regulations prohibit shooting females accompanied by young-of-year or yearling offspring, which also contributes to a male bias in hunter harvests. In the Yukon, a point system is used that provides incentives for outfitters to avoid harvesting females. Distinguishing between males and females is aided by the likelihood that females will usually be accompanied by offspring and males may be exceptionally large. In addition, there are training videos available to assist in educating hunters on the differences between male and female grizzly bears. In Montana, by using season timing and protective regulations for females with young, FWP was similarly able to focus harvests on males during its legal hunt.

Finally, regulated wildlife harvest is one factor that has allowed the recovery and maintenance of predator and prey populations in Montana and elsewhere. While funding will be generated through license fees, FWP strongly believes that regulated harvest of predators builds tolerance by those most negatively impacted by their presence. In addition, persons who participate in regulated hunting often play a pivotal role in maintaining the prey populations that predators are dependent upon. It is therefore intended that regulated harvest of grizzly bears be a part of Montana's program and commitment to

grizzlies, when and where appropriate. By managing grizzly bears as a game species they are provided recognition as a valuable wildlife species, protected from illegal harvest, afforded population monitoring and research, and all of the other benefits managed species receive.

In summary, FWP recommends that upon delisting, a regulated hunting season be a part of the overall program for the following reasons:

1. Legal harvest can be managed so as to have minimal impact on the population as a whole.
2. Human-bear conflicts could be reduced through harvest if such hunting is concentrated in conflict areas.
3. Hunting promotes better acceptance of this large and potentially life threatening animal by the local public who are asked to live with grizzlies, and this acceptance is a key to long-term survival of the bear. If the local publics feel threatened by grizzlies, or the management program, they will defend themselves as necessary. This in turn can have detrimental effects on existing grizzly populations and clearly limits opportunities for expanded recovery efforts due to local resistance.
4. Hunting grizzlies may alter cub survival and recruitment providing for population increase. While there is currently some scientific disagreement on this possibility, there is no question that initial harvest levels in western Montana will be so low that any effect of regulated take on increasing cub survival and recruitment would be impossible to measure.
5. Hunters have been, and continue to be, one of the strongest supporters of long-term conservation efforts. Hunters have purchased significant habitat in western Montana and returned it to wildlife use including grizzly bears. This strong connection between hunters and habitat is critical to continued successes at restoring wildlife including grizzly bears. Hunting gives direct ownership for the welfare of this species by some of the most ardent supporters of wildlife in Montana.
6. Hunting allows the grizzly to be a social asset instead of being considered by some groups as a liability. Hunting provides revenues from license fees on hunted species and excise taxes on equipment to governmental entities for enforcement of wildlife management regulations. In addition, there is an economic value to local, rural communities from regulated hunting programs. Without a regulated hunt, costs are borne by hunters who can't pursue grizzlies (because our programs still use license dollars) and the public at large.
7. The presence of licensed hunters can reduce illegal activities. Every year ethical hunters in Montana report people who have violated laws protecting wildlife. More "eyes and ears" in the field can deter illegal activities.

Harvest Management Guidelines

There are many statutes and regulations in Montana that would affect any proposed hunt. In addition, the State of Montana can anticipate specific management constraints on any hunt as summarized below:

1. Hunting will not be proposed immediately if, and when, delisting occurs. It is clear that the public will want some assurance that the other components of the grizzly bear management program are being adequately implemented prior to a regulated hunt.
2. There are areas that won't be hunted. There are currently areas outside the PCA and within that are closed to hunting and will continue to be.
3. The justification for any proposed hunt will be available to public scrutiny and comment prior to any decision or possible implementation.
4. Regulations have been and will be established to protect the female segment of the population as much as possible. For example, if a hunt were to occur, FWP Commission regulations make it

illegal to kill females accompanied by cubs or young and seasons can be timed to reduce female mortality.

5. After March 27, 1987, a state statute was implemented which only allows someone to kill one grizzly bear in that person's lifetime (87-2-702).
6. The FWP Commission has the authority to close seasons at any time if mortality was excessive, i.e. occurring at levels which would have long-term negative impacts on the population due to unforeseen circumstances.
7. FWP management experience has shown that while a general managed hunt can reduce some conflict situations; a "damage hunt" targeting individual problem bears has demonstrated this approach is of limited value in the management program. Therefore, we do not intend to use this approach for the following reasons:
    a. Damage hunts characterize the species as a "problem" instead of the valuable wildlife resource they represent.
    b. Response time is critical in damage situations and locating a hunter can delay response time.
    c. There are ethical problems with using technology, for example radio collars, to locate and kill problem animals.
    d. Many conflict animals are inaccessible to hunting during daylight hours.
    e. There are ethical problems associated with FWP "guiding" a hunter toward an individual bear.
8. No baiting or use of dogs to hunt grizzlies is permitted.
9. Any bear taken must be used for food. It is illegal to waste bear meat or leave it in the field. Also, bears will be hunted when their fur is in good condition to allow complete use of animals harvested.
10. Under MCA 87-3-110, it is illegal to buy or sell grizzly bear parts unless they have been registered with FWP.

Montana's hunting season setting process is an open and dynamic process, although it may be unfamiliar to non-hunters. The following is a synopsis of the process: A proposal is generated by a staff biologist or a group of biologists. The proposal is accompanied by a justification that relies heavily on biological data and includes population objectives, trends, habitat types, weather trends, and social constraints. The proposal is next reviewed internally and if found adequate is sent to the FWP Commission. After reviewing the proposal and justification, the Commission at its December meeting adopts, modifies, or rejects it as a tentative. If adopted as a tentative, it is then released for public review and comment. The public review process occurs annually in January and February. During this period, biologists around the state conduct public meetings and formal hearings in nearly all of the major cities and towns across the state as well as with any groups or organizations that request them.

Additionally, the tentatives are published and otherwise made available to any who wishes to review and comment on them. At the end of the comment period, all of the comments received during the meetings and any written or other verbal comments received during the comment period are summarized and sent on to the Commission for its review. In early February, the Commission then formally either accepts, modifies, or rejects the proposals based on the biological justification and the social concerns expressed during the review period. Additionally, the public can also make proposals to the Commission in the form of a tentative at the December meeting. This process is repeated on a biennial basis.

Alternatives Considered

1. *Eliminate hunting as a part of the grizzly bear management program.*

   This approach would eliminate a key local and national constituent group with demonstrated commitment to the species and its habitat. Additionally, this would greatly hinder FWPs ability to develop increased tolerance for the species. This management tool has been used successfully for other wildlife, including bears, in Montana and elsewhere and confirms its usefulness.

2. *FWP should make bear spray mandatory for hunters.*

   While FWP is currently prepared to assist in notifying people of the benefits of bear spray and encouraging recreationists to carry it, it appears premature to make it mandatory at this time. Mandatory carrying of bear spray may be appropriate at certain times or places, and FWP will evaluate this option as appropriate. However, there are currently significant liability and enforcement issues surrounding a "mandatory" approach. Furthermore, carrying spray may lead to a false sense of security that replaces common sense and careful backcountry practices. Bear spray can be ineffective in windy areas, and individual bears can have very different responses to the spray. Also, in some situations people would be better to assume a defensive posture (on the ground with no movement) than to be actively fumbling for a spray can. Also, the spray comes in many brands, with many capsicum concoctions, with many shelf-life constraints and propellant systems. It is no doubt a valuable tool, but it is only one of many and cannot replace common sense or other recommendations of appropriate behavior. However, to provide an example for the public, FWP will make bear spray available to all field personnel operating in bear country and encourage employees to carry it during the non-denning season when bears are active.

E. ENFORCEMENT

FWPs goal is to develop a program that includes the level of state and federal law enforcement deemed essential to achieve compliance with laws and regulations governing grizzly bear conservation.

- FWP enforcement personnel will continue to coordinate with federal, tribal and local authorities as necessary.
- FWP will enforce the statues relating to intentional feeding of both black and grizzly bears to eliminate the problem.
- FWP will seek authority by developing a Memorandum of Understanding (MOU) with federal agencies to enforce attractant storage regulations on federal lands.
- FWP will seek additional funding and authority to enforce travel management plans, including off-road vehicle use.
- FWP will evaluate the further need for higher fines and/or penalties for illegal mortalities.
- FWP will actively work to educate judges and county prosecutors on the importance of strict fines to deter illegal killing.

Statutes have been passed to make it illegal to intentionally feed or attract bears (Appendix H). People who intentionally feed or attract bears to their residence create problems that impact their neighbors, jeopardize human safety, and result in problem situations. These actions are now illegal.

In addition, because of concern that fines for illegal killing of a grizzly bear were too low, the state legislature increased them in 2005 (House Bill 514). Current state fines for illegally killing a grizzly bear

are $8,000 restitution plus $500 to $2,000 more, and imprisonment in the county detention center for not more than 6 months or both. In addition, that person, upon conviction or forfeiture of bond or bail, shall forfeit any current hunting, fishing, recreation use, or trapping license issued by this state and the privilege to hunt, fish, or trap in this state for 30 months from the date of conviction or forfeiture, unless the court imposes a longer forfeiture period. Fines for the interstate movement of illegally killed or possessed animals can be much higher. FWP will investigate ways of informing and educating judges and local prosecutors as to the importance of grizzly bear recovery to the state to ensure that they take prosecution and sentencing of offenders seriously.

The FWP Law Enforcement Division enforces rules established by the FWP Commission along with other Montana statutes related to wildlife and human safety. FWP enforcement efforts concerning grizzly bears are focused in three areas: patrols of both wilderness and non-wilderness areas, damage control, and poaching investigations. Wilderness and non-wilderness areas are patrolled during the general hunting season and at other times. In addition, hunter camps are checked for harvested game and compliance with outfitter regulations. Federal travel restrictions are not currently enforced by FWP wardens, except for hunters and anglers conducting those activities under FWP Commission Rules and Regulations. Initial conflict bear complaint responses may involve various FWP personnel; however enforcement division personnel are frequently the first on the scene. Generally, FWP wardens will assist landowners in contacting WS in cases of suspected depredation but will not investigate bear-livestock conflicts further, unless WS agents request field assistance.

There are currently MOUs between USFWS, USDA and FWP (Appendices D and I). These MOUs outline joint responsibilities for violations of federal and state laws. They also address responsibilities and guidelines for joint investigations by Montana game wardens and USFWS special agents, as well as between WS and FWP outlining joint investigations of grizzly bear depredations.

FWP and USFWS enforcement personnel investigate and prosecute all violations involving illegal mortality. Cases are processed through the county attorney's office or turned over to the USFWS when they appear to involve interstate movement of grizzly bear parts. FWP also coordinates with federal officials in undercover operations. The USFS manages attractant storage restrictions on Forest Service lands and some counties have county ordinances on food storage, which are enforced by the county sheriffs.

FWP wardens have no clear enforcement authority to enforce attractant storage regulations on Forest Service lands. Measures should be taken to establish this authority and FWP will investigate options. This will be increasingly important as the bear population expands and, hopefully, attractant storage regulations are required on additional national forest lands. FWP wardens spend a great deal of time in backcountry areas checking people on national forest and other lands, and their ability to enforce these rules would ultimately result in greater compliance and fewer bear/human conflicts.

Finally, the enforcement aspects are critical enough to program success that additional resources should be made available to implement new responsibilities. These would include sufficient funds for equipment and necessary overtime required to operate in remote areas and, ultimately, additional staffing. The USFS and BLM will be approached to try and identify additional funding to support FWP in these efforts due to increased responsibilities enforcing attractant storage and travel plan regulations if that authority is developed.

Alternatives Considered

1. *No additional authority should be sought, either through MOUs and statutes, to expand state enforcement authority in dealing with preventive measures relating to human-bear conflicts.*

   While this was considered, FWP enforcement personnel are in the most effective position to address these problems due to ongoing efforts to enforce all laws and regulations protecting wildlife. These personnel are stationed in communities across Montana.

F. EDUCATION AND PUBLIC OUTREACH

As grizzly bears expand their distribution, a key determinant of their long term status will be human attitudes towards them. FWPs goal is to minimize human-grizzly bear conflicts while building support for bears and bear management. Preferred approaches to meeting this goal include:

- FWP will continue to provide outreach programs to local schools, colleges and community organizations.
- FWP will develop ways to target education efforts towards both new and long-term Montana residents regarding human-bear issues.
- As time permits, FWP will work with local planning entities to address the needs of grizzly bears in select new developments and new residential areas.
- FWP will continue to work with private organizations and interest groups, as well as the media, to include safety tips on recreating in bear habitat.
- FWP will include lessons on human safety and conflict prevention while hunting in bear habitat in each hunter education class.
- FWP will continue to expand its efforts to assist hunters with identification of black versus grizzly bears. In 2002, FWP began mandatory training for people interested in hunting black bears. Organized training opportunities may be developed.
- FWP will evaluate if the current one time mandatory bear identification test should be taken annually.
- FWP will recommend that the Board of Outfitters require all outfitters and guides operating in bear habitat to be certified in human-bear safety and conflict prevention.
- Education and public outreach will be integrated with enforcement on issues such as sanitation to effectively minimize human activities that may lead to human-bear safety issues.

Underlying attitudes toward grizzly bears are highly variable and relate to issues as diverse as human safety concerns, perceptions of risk, economic impacts on livestock producers, and existence values. Given the varied array of attitudes, management strategies are unlikely to succeed without practical public information and education programs that are designed with specific stakeholders in mind. Therefore, a partnership information and education approach involving FWP, as well as other agencies, tribal authorities, local communities and private interests will likely be more successful at minimizing human/bear tragedies as well as developing a stronger sense of agreement among Montana residents about the state's goals and management programs related to bears.

FWP recognizes that the key to any educational program is cooperation and commitment by all involved to provide appropriate information. The development, implementation and widespread dissemination of accurate, fact-based information and educational materials concerning grizzly bears are essential for managing bears within the region. Moreover, those who live, work and recreate in western Montana need clear and useful information about bears in order to foster understanding of bear behaviors and to

minimize negative human-bear interactions. In essence, a coordinated information and education campaign will be most effective if it facilitates changing inappropriate human behaviors and helps people learn to coexist with bears. In fact, significant progress has already been made in this arena by utilizing the skills of FWPs bear management specialists and FWP intends to continue along these lines.

FWPs Communication and Education Division is responsible for developing outreach and education plans. The division provides timely information on FWP activities to the media and conducts a variety of educational and recreation-safety programs. Through this program, FWP will continue to promote the grizzly bear as a valuable state resource via public school and community presentations, community-based workshops, news releases, magazine articles, and radio and television spots. Informally, FWP personal from all divisions routinely disseminate information to the public on a routine basis and will continue to do so. FWP will encourage federal land management and wildlife agencies to continue their vital role in grizzly bear education. FWP will coordinate with these agencies to provide bear safety literature at their respective trailheads and offices in occupied bear areas. In many instances this is already underway.

Examples of current FWP educational and public outreach programs, implemented in many instances in collaboration with FWPs bear management specialists include the following:

- Presentations to schools, colleges, civic and sportsmen's groups.
- Interviews with newspaper, radio, and TV reporters.
- Statewide newspaper features.
- News releases, some with other interested cooperators.
- Radio reports.
- FWP website devoted to bear identification.
- Public Information Plan designed by Conservation/Education Division in reaching public.
- Video entitled "Bears and Bees," advising beekeepers about avoiding conflicts with bears.
- Information on electric fencing to keep bears out of orchards, garbage, grain storage and bee yards.
- Meetings with homeowner groups on sanitation, bear-proof containers at Whitefish, bear-proof enclosure fence for garbage containment.
- Day-to-day public contacts by FWP personnel during conflict situations with bears.
- Living with Grizzlies brochure (see Appendix B).
- Who's Who? - Know Your Bear brochure.
- Bears brochure.
- Be Bear Aware children's handout.
- Bear Hunters - Know Your Target! wallet card
- Internal education and training
- Bumper stickers "A Fed Bear is a Dead Bear"

Human safety is also of utmost concern when hunting in grizzly bear country. To instruct young, old and first-time hunters in appropriate techniques when hunting in grizzly country, FWP will incorporate a lesson on human safety while hunting in bear habitat in each hunter education class. In Montana, no person between the ages of 12-17 may apply for and receive any hunting license unless the person possesses a hunter safety certificate. Current records confirm that approximately 7,000 students are certified each year through FWPs hunter education program.

In 2001 (implemented in 2002), the FWP Commission adopted a program requiring mandatory bear identification testing to be completed by black bear hunters in Montana prior to the purchase of a black bear license. The program is offered because Montana's grizzly bear population is increasing in both number and in range. Today, grizzly bear encounters are on the rise, and black bear hunters must be aware that they are likely to encounter grizzly bears in areas they may not have inhabited just a few years ago. Black bear hunters must sharpen their ability to quickly distinguish between black bears and grizzly bears to prevent and avoid mistaken identity killings of grizzly bears.

The FWP Commission is also concerned about the impact that mistaken identity killings (e.g. grizzly versus black bear) could have on maintaining a recovered grizzly bear population or on recovery in areas that remain below stated objectives. The commission believes this issue can be addressed by directly informing and educating all black bear hunters. Some consider the elimination of the black bear hunting season in Montana a better solution. Such an action would, however, minimize FWPs ability to manage bears and create a myriad of other problems that essentially lessen support for management and expanded distribution of grizzlies.

The following summarizes the current bear identification requirements the FWP Commission approved:

- The requirement applies to everyone purchasing a bear license.
- Testing is required before purchase of a license.
- A minimum score of 80% is needed to pass the test. The test can be repeated until a passing grade is obtained.
- Recertification is not required.
- The test is available online through FWPs website (http://fwp.mt.gov/default.html), by mail, or at regional headquarters.

In order to reduce mistaken identity killing further, FWP is currently evaluating its bear identification requirements. Possible options include strengthening the test through the addition of more pictures and inclusion of questions about laws and situational ethics. In addition, implementing mandatory annual training courses for black bear hunters statewide, or for specific hunting districts in or adjacent to the CYE, are being considered.

Limited quota big game hunting seasons exist in many areas occupied by grizzly bears. Limited quota licenses require a special application and license issuance process. A brochure on bear country safety will be mailed to each successful applicant when their license is issued; this includes both resident and non-resident hunters.

The Board of Outfitters will also be encouraged to require that all outfitters and guides that provide services within areas occupied by bears be certified in human safety and conflict prevention in bear country. The outfitting industry has voluntarily developed a bear education course in partnership with the USFWS, USFS, National Park Service, the Wyoming Game and Fish, and the Professional Guides Institution. This course would serve as the model for training in Montana. In addition, a bear safety video has been purchased and made available by FWP.

Alternatives Considered

1. *No expansion of education and public outreach efforts.*

   Expanded efforts are essential to the objective to allow for expanded bear distribution and long-term survival of the species.

2. *Modify the mandatory bear ID test for black bear hunters to require "in person" testing and recertification.*

   Because this is a new program, it will be monitored to determine its success at reducing mistaken identity mortalities. If adjustments such as those suggested or others become necessary, they may be implemented in the future. Such changes are currently being evaluated in the Cabinet-Yaak area.

G. FUTURE RESEARCH

While ongoing monitoring and research has provided a wealth of information on grizzly bears in the region, much still remains unanswered. FWPs goal is to promote a scientifically sound research program that increases our knowledge of grizzly bears in western Montana in order to guide recovery efforts and increase public support and confidence in the program. Preferred approaches include:

- Continuing research will be an important component of the grizzly bear program.
- Research proposals will be evaluated by the appropriate Interagency Grizzly Bear Subcommittee to ensure that they are justified and address questions specific to the grizzly bear recovery program. FWP will also examine the possibility of incorporating additional outside review.
- Collaborative research will be undertaken with partners such as universities, NGOs, tribal authorities, federal agencies and adjoining provinces.
- Research projects will focus on gaining a greater understanding of region specific factors affecting grizzly bear numbers and distribution. Continued baseline research on habitat use, movement patterns, population trends, survivorship and mortality will be conducted.
- Population health assessments and investigation of potential impacts of disease will be initiated.
- Research that is applied in nature and integrates the biological, economic and social factors affecting grizzly bear management will be actively pursued.
- Bear use, human use and human-bear interactions in areas of high human occupancy are a priority.
- Impact of recreational activities on grizzly bear seasonal habitat use are a priority i.e. snowmobiles and backcountry use.
- Efforts to assess impacts on habitat security as a result of commercial activities such as mining and timber harvest are a priority.
- FWPs Communication and Education Division will evaluate effectiveness of bear-safety public education efforts.
- Research findings will be published and/or disseminated at regional meetings and to interested/affected parties.

Research is an iterative and ongoing process, and FWPs adaptive management program is formatted to include updated information and understanding of the species and its requirements. Considerable work has been conducted on grizzly bears in other areas; namely the GYE. While many of these research findings are applicable to northwestern and western Montana, incorporating an active research component into this plan will provide FWP with region specific data. Such data will ultimately refine our knowledge of bears in the region.

Population and habitat research is already being conducted as part of an on-going monitoring program. In addition to these projects, Montana requires improved means of assessing the biological carrying capacity of actual or potential grizzly bear habitats. Understanding habitat capability through intensive research utilizing GIS technology may assist with this and USFS is already engaged in such research. Such assessments are important to ensure that restoration efforts for grizzly bears are successful in areas where expansion is occurring. It also allows management policy to adapt to environmental change thereby ensuring long-term persistence. As such, adaptive management is an active flexible management strategy in which managers monitor the results of management practices using habitat and population data and respond as necessary with management changes. An Adaptive Management plan includes three critical elements:

1. Conceptual and quantitative models that make explicit the current understanding of the system, the underlying hypotheses driving management, and key uncertainties;
2. Rigorous monitoring plans focused on reducing the most critical uncertainties and clearly evaluating progress towards management goals; and
3. A scientifically defensible plan for monitoring and research including rapid feedback from management outcomes to revised management decisions.

FWP is also interested in evaluating the efficacy and projected outcomes of specific management actions. This will be accomplished through a combination of the monitoring effort and research efforts to evaluate management strategies in various settings. For example, by investigating bear use, human use and human-bear conflicts in areas with high human occupancy such as portions of the NCDE, managers and local communities will in a position to adopt changes and reduce the likelihood of human-bear conflicts.

Continued improvements based on assessing potential impacts of hunting will provide useful data because grizzly bears have one of the lowest reproductive rates among North American mammals. Without such techniques, appropriate hunting opportunities may be needlessly curtailed, or populations overharvested. Ongoing assessments such as this are part of other wildlife management programs and will be for grizzly bears.

Further research aimed at investigating the importance of anthropogenic impacts on bear habitats is required. As documented elsewhere, roads, commercial activities (mining, logging), livestock grazing, suburban sprawl, and recreational uses (i.e. snowmachining, off road vehicles) may impact the ability of bear populations to persist in an area. More intensive research is required to determine threshold levels at which such impacts become significant as well as possible ways to mitigate adverse human impacts on grizzly bear populations. Similarly, it is important to find ways to identify threshold levels of tolerance for adverse impacts of grizzly bears on humans. Additional research on genetic conservation, deterrent/repellants, and conflict management would also be helpful.

Efforts to restore grizzly bears also require better information on economic and ecological costs and benefits of bears and social attitudes towards bears. Among other reasons, such information is needed to demonstrate the value of preserving wildlife movement and access to habitats.

H. COSTS AND FUNDING

FWP believes that the key to successful implementation of these programs is the establishment of dependable long-term funding. FWPs goal is to seek adequate funding from a diversity of sources to enable the program to be implemented. Preferred approaches include:

- License revenue will be used to partially fund these programs as well as federal Pittman-Robertson funds from excise taxes on firearms and ammunition.
- FWP will seek significant additional federal funding for and develop an MOU with federal agencies to contribute funding support and involvement with habitat and population monitoring within the recovery zones, as directed by a Conservation Strategy, and on federal lands outside the recovery zones.
- FWP will explore avenues to encourage recreationists to participate in program funding.
- FWP will continue to work to find ways for national interests in this species to be reflected in long-term funding commitments, i.e., a national endowment, Congressional act, or other mechanisms.
- While cost of the program will initially increase over current levels, these costs should stabilize or even decrease over time as the species is managed as one component of our overall wildlife program.
- FWP will explore development of a grizzly bear specialty license plate as an additional source of funding.

Each year FWP spends approximately $400,000 on grizzly bear management programs (Table 8). These funds are used primarily to monitor and manage population status, distribution, conflict, and mortality within the state. As grizzly bear numbers and their distribution increase so too will management costs.

Table 8. FWP western Montana grizzly bear management plan expenses.

Expense	Current Expenditures	Additional Funding Needs
Human/Bear Conflict (includes: wildlife specialists, bear dog contract, preventative measures, wardens, biologists, and staff time)	198,000	88,000
Monitoring (females with cubs, radio tracking, DNA work, FWP Laboratory expenses)	150,000	175,000
Outreach (conservation education, news releases, etc.)	40,000	25,000
Admin (statewide program administrative costs)	20,000	20,000
Total	**408,000**	**308,000**

While future costs are difficult to estimate, particularly in light of the fact that expansion may not be limited in the near future, FWP acknowledges that existing financial resources are not adequate. The costs associated with data collection and conflict management will certainly exceed funds currently available. As a result, the grizzly program will not be self-sufficient and will likely always rely on existing funding sources to a large extent. This is not unusual as the costs associated with managing most big and small game, as well as fisheries, programs typically exceed revenues from license sales.

As is the case with any other managed species, adequate management of grizzly bears should take place wherever they are allowed to reoccupy. Moreover, the grizzly bear is a species of national interest. FWP will continue to pursue some form of a national endowment with funds generated from Congress. Interest from the endowment would be used to offset the costs of managing the grizzly bear in western Montana, especially inside the recovery zones. This would truly empower all state and federal agencies with the ability to more effectively manage this species.

FWP will also seek implementation of expanded funding sources such as those appropriated for State Wildlife Grants since 2001. These are considered in Congress each year. In addition, the states of Montana, Idaho and Wyoming are still investigating the idea of a grizzly bear/gray wolf trust fund that could be created through a special federal appropriation to fund the conservation and management of these two species of national significance. Regardless of the source, the key to successful implementation of these programs is the establishment of dependable long-term funding.

Alternatives Considered

1. *This program should be solely contingent on increases in federal funding*.

   Our experience indicates that a solid state-funding base is a key component in long-term success. The estimated costs for implementing this plan are presented above (see Table 8). This is not intended to be a detailed description of program costs, but it does provide an idea of current and anticipated expenses. Annual budgets are impacted by both federal and state processes, and these can impact funding and priorities.

I. EXPANDED LOCAL INVOLVEMENT

Implementing successful long-term wildlife programs requires the support of local communities that share the land with these species and are therefore most affected by ensuing management decisions. By actively involving local communities and inviting their participation, FWPs goal is to develop an integrated grizzly bear program that incorporates local knowledge and site specific solutions to promoting the recovery process. Accordingly FWPs preferred approaches include the following:

- On approval of this plan, FWP will conduct town meetings in western Montana as the first step in explaining the programs and cultivating local interest.
- FWP will explore opportunities to form or support local work groups in Libby, Seeley/Swan, Thompson Falls, Hamilton, Choteau, Ovando, and Kalispell. If needed, additional groups may be created in other areas. Existing groups with interests in these issues could also be identified and contacted. For example, the Blackfoot Challenge and North Fork Interlocal.
- If local interest groups are established, the area biologist will coordinate with them and plan to attend at least one annual meeting to address grizzly bear management concerns. This would also provide a forum for sharing information on current grizzly bear science, population status, and management approaches with local residents.
- FWP anticipates that over time, such meetings will provide local residents with an opportunity to discuss and anticipate conflicts, prepare for them, and develop innovative approaches to try and prevent them.
- With the input of local residents and other interests, and through the programs adaptive management framework, over time experience and knowledge will accumulate. Outcomes can be evaluated and policy changes made if, and when, needed.

Montana's intent, through such efforts, is to increase local participation in program development and long-term local ownership of bear conservation programs.

- Local work groups would act in an advisory role, and partner with FWP. The purpose is to share information, generate citizen recommendations for resolving human/bear conflicts, and increase tolerance for bears. Work groups should include agriculture, conservation, sportsmen, land

management agency, and community business representation and should coordinate across state and provincial boundaries where appropriate.

- Sanitation in rural communities that lie within occupied bear habitat is an ongoing issue and efforts to address it continue in Whitefish, Seeley Lake and other areas. Efforts require strong citizen involvement and FWP envisions a cooperative endeavor between FWP, local citizens, county commissioners, private interest groups and garbage haulers to solve sanitation problems. Some of this is already occurring.
- FWP will seek to develop a MOU between counties and cities with bear resistant garbage ordinances to enhance enforcement effectiveness at the state, county, and community level.
- FWP has programs to address issues with urban wildlife, including bears. In some cases, groups have been established to address such issues and funding is available to support their efforts.
- FWP recognizes that there is a national interest in the long-term conservation of this species. As such, Montana anticipates providing opportunities for those representing that interest to be involved as this program is developed and implemented. Any local meetings will be open to the public and opportunities will be provided for others to share their perspectives and contributions to program success. Interested parties can and do also participate in the national processes which affect federal lands and programs.

5. ALTERNATIVE APPROACHES FOR FUTURE MANAGEMENT BY AREA

The document to this point has described specific aspects of the Department's grizzly bear management program that are common across the state and relate to day-to-day management of the species. The purpose of this section is to discuss a variety of alternatives for future direction for populations within each recovery zone and the surrounding area and identify and discuss possible changes in program direction as well as to indicate the Department's preferred approach. It also evaluates the significance of any potential impacts associated with implementing this DPEIS and management tools used to mitigate negative impacts.

While there have been significant successes in some recovery zones, notably the Northern Continental Divide, recovery in the Cabinet-Yaak recovery zone has been slow and tenuous. Moreover, recovery programs in the Bitterroot have not been implemented. This section will present various approaches to possible future direction and the benefits and challenges of those approaches. It is FWPs opinion that new and or innovative approaches would be helpful to speed recovery in the Cabinet-Yaak and Bitterroot as well as securing successes in the Northern Continental Divide. Further, FWP believes that by continuing to foster cooperative working relationships with federal and state agencies, provincial and tribal governments as well as local organizations, successful conservation and management of grizzly bears throughout western Montana can be achieved.

Cabinet-Yaak Recovery Zone and Surrounding Areas

The current CY recovery zone encompasses about 2,600 mi^2 of northwest Montana and northern Idaho (see Figure 2). It is bordered to the north by the Canadian border, to the south by the Clark Fork River and Montana Highway 200, to the west by the towns of Moyie Springs and Clark Fork, and to the east by the town of Libby. The CYE is bisected by the Kootenai River.

The Cabinet Mountains account for approximately 58% of the CY recovery zone and lie south of the Kootenai River, while the Yaak River borders Canadian grizzly populations to the north. Two 7.5 mile wide linkage zones link the Yaak with the Cabinet Mountains. Approximately 90% of the recovery zone is on public land administered by the Kootenai, Lolo, and Panhandle National Forests. Plum Creek Timber Company Inc. is the main corporation holding a significant amount of land in the area. Individual ownership exists primarily along the major rivers, and there are numerous patented mining claims along the Cabinet Mountains. Wilderness encompasses 237 mi^2 of the higher elevations in the Cabinet Mountains. Libby, Troy, Thompson Falls, Noxon, and Trout Creek are the primary communities adjacent to the East Cabinet Mountains.

The CYE is often described in terms of having two portions. The Cabinet Mountains portion forms the southern half of the CYE and is topographically diverse, with a steep mountain range up to 8,700 feet near the center and more definable seasonal habitats. The Cabinet Mountains Wilderness area is approximately 34 miles long, varies from 0.5 to 7 miles wide and consists of higher elevation habitat. A valley of private land including the towns of Libby and Troy dissects the northern Cabinet Mountains. The southern Cabinet Mountains are therefore connected to the Yaak to the north by 2 relatively narrow corridors of habitat. The Yaak portion of the ecosystem has gentler topography and slightly lower elevations, up to 7,700 feet. Seasonal grizzly bear habitats are not as clearly definable but are connected to British Columbia bear populations.

The 1993 Grizzly Bear Recovery Plan estimates that a recovered population in the CYE would consist of a minimum of 100 individual grizzly bears. Potential isolation from grizzly bears in the Canada portion of the greater CYE has however been identified as a potential threat to grizzly bears in the U.S. portion of the ecosystem. Conditions in Canada and along the international boundary currently allow movement of grizzly bears between Canada and the Yaak portion of the CYE, but grizzly bear habitat is being impacted by highways and associated development in Canada. Additionally, U.S. Highway 2 bisects the ecosystem between the Yaak and Cabinet Mountains portions. To date, there has been no documented movement of grizzly bears across Highway 2 between the Yaak and Cabinet Mountains. Consequently, the combination of highway, river, railroad, associated development, and small population size appears to be a substantive barrier to movement of grizzly bears in the ecosystem.

Alternative 1. Continue Existing Program

FWP evaluated continuing to implement the existing programs and management direction. As with any program, there have been many changes since the FWP 1986 Programmatic EIS for this area. Many of these changes have benefited the grizzly population. Efforts from other agencies have certainly enhanced our understanding of grizzly bears and their use of the area however, they have not resulted in significant recovery to date. Because the initial population was so low and funding limited, progress towards recovery of this portion of the ecosystem has been limited and could be easily reversed.

Benefits

- Recovery programs have been implemented in conjunction with the citizen's group established to assist with the augmentation test and ongoing grizzly augmentation for the ecosystem. Based on changes in land management and public understanding, support for recovery has increased in some circles in the last two decades. There is some evidence of additional bears, notably in the Yaak area, and because recovery occurs slowly, the public may more readily support our efforts.
- Land changes have occurred that benefit grizzlies in the area.

Challenges

- Recovery in this ecosystem has been slow and tenuous. Even slight changes in mortality levels can dramatically impact the success of recovery.
- The initial augmentation was only to test the technique and was not intended to achieve recovery.
- Because the population levels are low in the Cabinet-Yaak and survival of each individual animal is critical, constraints on land use and activities may be higher than necessary if the population was more abundant.
- Low numbers of bears also limits flexibility for dealing with conflict situations between people and bears.
- Because there has been limited success for two or more decades, the public may feel that full recovery is not possible and efforts should cease.
- There will be ongoing pressure for additional habitat and land management constraints to support the existing small population.

Alternative 2. Accelerated Recovery- FWPs preferred alternative

This alternative evaluated accelerated recovery in the Cabinet-Yaak through more rapid augmentation and reduced human-use mortality of the population. Based on data assembled for the 1986 State Grizzly Bear Management Plan, sufficient habitat exists to support at least 90-120 bears in the Cabinet-Yaak area.

By implementing an active community based augmentation program, we believe there is potential to vastly improve the recovery prospects for this recovery zone.

Under this alternative, in cooperation with USFWS and USFS, 10-15 sub-adult male or female, or appropriate adult females, would be relocated from other areas (Yellowstone, NCDE, or Canada) within the next 3-5 years. At the present time, the emphasis for augmentation will be on females because it is believed that there are still sufficient males within the area to support recovery. No conflict or habituated and/or food conditioned bears would be used for augmentation, and released animals would be intensively monitored. After an initial effort, the program would be evaluated for its successes or potential problems and if successful ongoing augmentation of sub-adult females would continue to occur until population objectives, 90-120 bears, had been achieved through a combination of augmentation and natural reproduction.

Modeling suggests that if human-caused mortality is not reduced, successful augmentation will require far more bears. Furthermore, if linkage between the Cabinets and Yaak are not established, augmentation would be required well into the future. As a consequence, this approach also recognizes the need to include programs aimed at reducing human-caused mortality and improving or creating population linkage.

Benefits

- Active involvement of the local community would be higher and public opposition would be lessened.
- The potential for more rapid recovery of this population.
- There are genetic benefits associated with reducing the length of time a population remains demographically small or isolated during recovery.
- While current programs have provided for some connection between the NCDE and the Yaak portion of the ecosystem, this approach would probably speed connection between the Cabinets and the Yaak as well by increasing population size and eventual occupancy of the Highway 2 area between them.
- With a more robust population in the area, we may be able to better determine which areas and management prescriptions are necessary to maintain grizzly bears in this recovery zone. In turn, this could result in more flexible management in other portions of the ecosystem.
- Recovery and delisting of the population could occur in a much shorter timeframe than the no-action alternative.

Challenges

- Local support would be critical to any successful augmentation. Support and tolerance for grizzly bears may be tested with increasing distribution and number of translocated animals.
- There is some uncertainty of the survival level for translocated animals.
- Some people may feel threatened by a recovered population.
- It may be difficult to capture sufficient subadult females to meet the shortened timeframe.
- Higher population levels will result in the need to have conflict management programs in place.
- This approach would require significant funding commitments over existing programs.

Alternative 3. Endangered Status

The decision to change the status under the Endangered Species Act is not ours to make. Rather this decision lies within the authority of the Department of Interior through the USFWS. Under Montana State law, FWP does have authority within state statutes and processes to list the grizzly bear as

endangered, however, the federal Endangered Species Act would supersede this and direct management within Cabinet-Yaak. Alternatively, FWP could seek a change from the USFWS to alter the status of the Cabinet-Yaak population to endangered and pursue recovery in that arena.

While the grizzly bear is currently listed as warranted but precluded for endangered status, there has been litigation to force the change to endangered status. Moreover, there are certain segments of the public that feel that more restrictive habitat and land management constraints need to be in place for this population to survive and endangered status would support those actions.

Benefits

- Endangered status would bring the full force of the statute into the recovery effort.
- Larger land areas could be managed with more focus on the needs of grizzly bears.
- Endangered status would limit resource industry activities harmful to bears.
- Make clear the legal status of the bear to the public.

Challenges

- In our judgment, local support under fully endangered status would be difficult to maintain.
- Resource industries could be further impacted by additional regulations.
- Past experiences with other species shows elevated levels of social conflict with large carnivores being managed under endangered status.
- FWP cannot directly implement this alternative because only the USFWS can revise the status of this population.

Northern Continental Divide Recovery Zone and Surrounding Areas

The NCD recovery zone encompasses approximately 9,600 mi^2 of northwest Montana (see Figure 2). Extending south from the Canadian border, it continues west into the Flathead and Mission valleys, south to the Blackfoot River basin, and eastward onto the Rocky Mountain Front. It includes a varied landscape encompassing five Wilderness areas (Bob Marshall, Scapegoat, Great Bear, Rattlesnake, and Mission Mountains), portions of five National Forests (Flathead, Kootenai, Lolo, Helena, and Lewis & Clark), Glacier National Park, the Blackfeet and Flathead Indian Reservations, and other federal, state, and private lands.

Because of its proximity to Canadian bear populations, large land area, and high proportion of designated wilderness and national park lands, the NCDE offers some of the best long-term prospects of supporting a viable grizzly bear population among the six areas designated as grizzly bear recovery zones in the US. While final results from the current NCDE DNA project will not be available until early 2007, the Department's previous EIS's have estimated that the NCDE supports a grizzly bear population of approximately 500-700 bears. If results from the NCDE DNA study estimate a substantially different population size, programs may have to be adjusted.

The area is characterized by extremely diverse habitats, much of it being heavily forested, mountainous, and a largely roadless wilderness. Conversely, more than 10% of this ecosystem is private land and the majority of bear-human conflicts and bear deaths occur on these private lands. In 1980, using baseline information collected by the Border Grizzly Project, FWP launched an ecological study of grizzly bears along the Rocky Mountain East Front. This area contains a unique transition between the Rocky Mountain Cordillera and the short-grass prairies of the Great Plains. This study ended in 1987 and provided information on the ecological requirements of grizzly bears along the eastern side of the NCDE,

and their response to oil and gas development and other human activities. FWP has recognized that ecological requirements of grizzly bears differed between the more open and dry Rocky Mountain East Front and the moister habitats to the west of the Continental Divide. These differences and the lack of ecological information on grizzly bears in western habitats suggested a west-side study would be necessary.

Studies of grizzly bears in the lower reaches of the South Fork Flathead River were initiated in 1987. This study, termed the "South Fork Project" was situated in the northern Swan Mountains. The goal was to document factors limiting population size and to test methods for monitoring population trend. Habitat objectives included evaluation of seasonal habitat selection, and the effect of roads on grizzly bear distribution and survival.

Alternative 1. Continue Existing Program – FWPs preferred alternative

Recovery programs to date have resulted in successes in portions of this ecosystem. Basic grizzly bear management programs and activities are in place and current processes allow for periodic updates and changes. Furthermore, evidence from previous reviews indicated a large and healthy population that remains connected to the population in Canada. As many program changes needed to benefit grizzly bears have already occurred and have been or are being implemented, FWPs preferred alternative in the NCDE is to continue these successful efforts. In the formal language of MEPA, this constitutes the "no action" alternative.

Benefits

- Grizzly bears already occupy the majority of the recovery zone and have expanded beyond it in many places.
- Connections may have been, or are close to being, established through natural migration with the Yaak portion of the Cabinet-Yaak recovery zone.
- Programs and commitments are in place to maintain this population at recovered levels.
- Habitat protection is already significant, including large areas in national park and designated wilderness areas. Additional habitat adjacent to these areas is being managed in a way that addresses grizzly bear issues.

Challenges

- A review of existing commitments and agreed upon long-term measures has not been established. A conservation strategy needs to be prepared and approved to document commitments among managing agencies within and beyond the recovery zone.
- Tolerance for bears is being tested in some places at current population levels.
- Mandatory habitat protection is impacting economic viability of important resource industries. Maintaining an adequate balance between resource industry needs and grizzly bear habitat needs is a challenge.
- DNA estimate may indicate the need to adjust and/or modify the current program.

Alternative 2. Accelerated Recovery

FWP believes that an accelerated recovery process is probably not warranted for this recovery zone. There may be small peripheral portions where additional animals could be augmented to bolster densities (example: Rattlesnake Wilderness area), but cost effectiveness is questionable.

Benefits

- Ensures all areas of the ecosystem are occupied, and most areas have good densities of bears.
- Will probably speed the rate of distributional increase in some areas outside the recovery zone.

Challenges

- Many people would question the need for accelerating recovery when in fact evidence indicates recovery has already largely occurred.
- Accelerated efforts to increase the population may reduce existing tolerance for this healthy bear population.
- Results of the DNA population estimate will not be available until late 2006, and the public may be unwilling to change program direction without this information.

Alternative 3. Reduce Recovery Efforts

This alternative acknowledges the status of the NCDE population and changes programs by reducing efforts in some areas. Previous reviews by FWP in 1986, 1991 and 1995 indicated that this area has a significant and healthy bear population. If such estimates are validated by the DNA population estimate project results in early 2007 it could provide the basis for changing program direction. Population estimates in past reviews were similar to levels currently estimated for the Yellowstone area which is being considered for delisting. The population in the NCDE is also connected with that to the north in Canada. With this alternative the department would scale back some programs and/or research on grizzly bears in the NCDE. The benefits and challenges of this approach are as follows:

Benefits

- The money and other resources preserved by scaling back efforts in the NCDE could be used to support recovery in other areas.
- This approach acknowledges the biological status of the population in this area.
- It could potentially enhance public support for recovery in other areas if it is seen that progress in recovery does result in changes in program direction.

Challenges

- Failure to maintain programs on a par with the grizzly bear population could result in escalated conflicts and/or problems, ultimately eroding public support.
- The public will still demand updated information and assurances that the population is healthy. Scaling back on population monitoring will reduce public confidence in the program.
- There is a public expectation that bear programs built around conflict management, public education and community support will continue.
- Difficult to scale back management efforts while the bear is listed as threatened without losing public support.
- The ability to achieve or maintain distribution increases and connections with other ecosystems may be reduced if programs are dramatically reduced.
- Delisting would be delayed with loss of public support.

Bitterroot Recovery Zone and Surrounding Area

The Bitterroot ecosystem is one of the largest continuous blocks of federal land remaining in the lower 48 states. Any recovery effort here will require cooperation with the State of Idaho. The core of the ecosystem contains the Selway-Bitterroot and Frank Church-River of No Return Wilderness Areas.

Together these two wilderness areas make up the largest contiguous block of wilderness habitat in the Rocky Mountains south of Canada. Of all remaining unoccupied grizzly bear habitat in the lower 48 states, this area in the Bitterroot Mountains affords one of the best possibilities for grizzly bear recovery. As such, the region offers excellent potential to recover a healthy population of grizzly bears and to boost long-term survival and recovery prospects for this species in the contiguous U.S. The recovery of the grizzly bear in the Bitterroot would also aid in restoration of Nez Perce Tribe cultural and spiritual values related to the grizzly.

Historically, the grizzly bear was a widespread inhabitant of the Bitterroot Mountains in central Idaho and western Montana. When Lewis and Clark traveled through the Bitterroot country in 1806, grizzly bears were abundant. They killed at least 7 grizzly bears including 1 female and 2 cubs while camped near present-day Kamiah, Idaho. Grizzly bears were common in central Idaho until the early 1900s. One author wrote of killing dozens of grizzly bears over several years in the Bitterroot Mountains. A major influx of hunters, trappers, and settlers at the turn of the century, and later sheepherders, were responsible for direct mortality and elimination of grizzly bears from the Bitterroot area. Conservative estimates indicate trappers and hunters killed 25 to 40 grizzly bears annually in the Bitterroot Mountains during the early 1900s. The last verified death of a grizzly bear in the Bitterroot ecosystem occurred in 1932 and the last tracks were observed in 1946. Although occasional unverified reports of grizzly sightings persist, no verified tracks or sightings have been documented in more than 50 years.

In 1975, the grizzly bear was listed as a threatened species in the 48 contiguous states under the U.S. Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). At that time the Bitterroot ecosystem, along with the Northern Continental Divide and Yellowstone ecosystems were listed as areas where grizzly bears were known or thought to exist and where recovery should be emphasized.

A Grizzly Bear Recovery Plan, finalized in 1982, called for the evaluation of the Selway-Bitterroot country as a potential recovery area. At that time the Bitterroot ecosystem was classified as an Evaluation Area because it was in need of more research to determine habitat quality and whether grizzly bears still occurred there. The Bitterroot Evaluation Area (BEA) encompassed about 5,500 mi^2. The boundary ranged from the St. Joe River Watershed divide in the north, to the Salmon River in the south, the transition of roaded and unroaded National Forest land in the west, to the Selway-Bitterroot Wilderness boundary and Fish creek road in Montana in the east.

Attempts to verify presence of grizzly bears continued through the 1980s and are ongoing. Numerous studies have failed to verify the presence of grizzly bears in this region. Three different habitat studies were conducted from 1979 through 1991 to investigate habitat suitability of the BE for grizzly bears. The authors suggested habitat in the BEA was sufficient to support grizzly bears. An interagency group of grizzly bear scientists reviewed the information and concurred, suggesting the BEA could support between 200 and 400 bears. Following these efforts in 1991, the IGBC endorsed the Bitterroot ecosystem as a recovery area and recommended the USFWS pursue grizzly bear recovery in this region.
The ecosystem includes about 16,686,596 acres (26,073 mi^2) of contiguous national forest lands in central Idaho and western Montana. These include all or parts of the Bitterroot, Boise, Challis, Clearwater, Nez Perce, Payette, Sawtooth, Salmon, and Panhandle National Forests in Idaho, and the Bitterroot and Lolo National Forests in western Montana. A few scattered parcels of private and state land are interspersed throughout this area, but total acreage is minor.

The center of the area is characterized by 3 large wilderness areas covering a contiguous area of almost 4 million acres (6,250 mi^2). These include the Frank Church-River of No Return (2,361,767 acres, 3690 mi^2),

the Selway-Bitterroot (1,340,681 acres, 2095 mi²) and the Gospel Hump (200,464 acres, 313 mi²) Wilderness Areas. The area contains 3 major mountain ranges, the Salmon River Mountains (south of the Salmon River), the Clearwater Mountains which extend from the Salmon River north to the upper Clearwater River drainage, and the Bitterroot Mountains along the Montana-Idaho state line.

Alternative 1. Preparatory Planning – FWPs preferred alternative

Under this alternative, preparatory planning would be undertaken for the anticipated presence of grizzly bears within the ecosystem whether they arrive through natural migration or through a USFWS decision to reintroduce as per their Record of Decision on the Final EIS for Grizzly Bear Recovery in the Bitterroot Ecosystem. It is important to note, therefore, that this approach does not require an active relocation component and FWP will not unilaterally reintroduce bears under this alternative. Instead, FWP would work with agencies, local citizens, local businesses and other interested parties to ensure that provisions are in place should bears occupy the recovery zone at some time in the future.

This approach would include an intense sanitation and public education campaign. A sanitation program is already being implemented by Defenders of Wildlife and the National Wildlife Federation. It is envisioned that this would continue and/or be expanded to include efforts by FWP, USFS, permittees, and private landowners in and around the recovery zone. The Survey of Attractant Sites, Selway-Bitterroot Ecosystem which was conducted by Brown Bear Resources, Inc. would be utilized as a tool in addressing the areas where sanitation problems exist. Public education efforts would include: presentations at schools in and around the area to teach children about grizzly bears and how to recreate safely in grizzly bear country; presentations to all civic clubs and interested organizations about grizzly bears and how to recreate safely in grizzly bear country, and placing of informative signs at all trail heads in and around the recovery area.

Benefits

- Necessary steps to prepare the ecosystem and the public prior to potential bear arrival would be in place.
- Anticipatory approach that includes citizen involvement from the onset.
- Education and public outreach would be initiated prior to potential bear arrival.
- Measures aimed at reducing human-bear conflict would be in place prior to potential bear arrival.
- Public opposition should be lessened with this approach.

Challenges

- Requires significant resource commitments up front.
- Active recovery would not be initiated immediately, if at all.
- May be difficult to source sufficient funding without presence of bears.
- Public opposition to possible reintroduction.

Alternative 2. No Action

Under this alternative, no active recovery efforts would be implemented. It is possible that grizzly bears could make their way to this ecosystem (some have already come close). However, timeframes for recovery would be unreasonable (hundreds of years) to reach the recovery goal of 200+ bears. Further, no preparatory action would be taken.

Benefits

- Segments of the public resistant to the presence of grizzly bears will likely be supportive.
- More public support from certain segments of society for natural recovery than a reintroduction.
- Minimal cost.

Challenges

- Protecting adequate habitat components for a recovered bear population would be difficult. Major valley floors and key spring ranges are becoming heavily populated with humans.
- Public interest in bears would decline or become non-existent.
- Mortality and management issues in the areas between the Bitterroot and other ecosystems may prohibit recovery from occurring.
- More severe habitat and land management constraints would have to be placed on lands between the currently occupied areas and this ecosystem.
- Higher costs involved in purchase and easement programs.
- In the absence of a preparatory planning program, conflicts would become increasingly severe and difficult to resolve should bears make their way into this ecosystem.

Alternative 3. Accelerated Recovery Through Reintroduction.

Under this alternative, should the USFWS grant FWP permission, grizzly bears would be reintroduced into the Montana portion of the Bitterroot ecosystem under the provisions of the ESA (the number of bears would be determined by how fast recovery was to be achieved).

Benefits

- Active recovery would begin to occur and grizzly bears may be given deference in land management and human activity decisions.
- Clear protected status of grizzly bears.

Challenges

- Segments of the public resistant to the presence of grizzly bears will likely oppose any reintroduction.
- Support for reintroduction from adjoining State of Idaho would strengthen program but may be difficult to achieve.
- Finding sufficient animals to support the reintroduction.
- Process requirements would be very expensive.
- Uncertainty about survival of reintroduced bears from other areas.
- FWP does not have the authority to implement this alternative without prior authorization from USFWS.

Short Term and Long Term Impacts

FWP evaluated the significance of potential impacts associated with implementing this DPEIS. Successful implementation of this grizzly bear program may result in a broad range of short term, long term and cumulative impacts within the 17-county region. In general, most adverse impacts associated with implementing this DPEIS are anticipated to be short-term and/or localized, and would be reduced significantly by implementation of mitigation measures. There are unlikely to be direct environmental consequences (i.e. those caused by an action and occur at the same time and place) because actions and preferred alternatives are programmatic in nature and apply in many cases to future management activities. In order to comply with requirements for environmental analysis, the DPEIS analyzes all

impacts to the human environment that are identifiable. The analysis of those impacts is based primarily on projections of how future activities and areas would change because of the proposed actions. Such projections are however inherently uncertain and difficult to predict.

Under this program, grizzly bear numbers within western Montana are likely to increase over time and it is probable that such increases would result in expanded occupation and use of habitats within and outside the recovery zones. While the significance of impacts resulting from bear expansion beyond the recovery zones would be reduced through mitigation (see Strategies to minimize human-grizzly conflict, page 32), increased human-caused mortality and human-bear conflicts are possible (see Conflict Management, page 30). Furthermore, the human population in the 17-county analysis area is predicted to expand during the timeframe of this plan (see Size and Human Population, page 11). Increasing rural settlement and subdivisions on private lands could impact the bear's use of habitat and movement between habitats. Bear habituation to humans could become more prevalent, increasing risks to both the bear and public safety.

Implementing habitat measures and preventative management programs will likely benefit other species of wildlife in Montana, especially black bears. Black bear issues parallel those surrounding grizzlies, and the programs recommended in this plan should assist FWP in multi-species management. Habitats that are managed in a way that affords opportunities for occupancy and expansion of the grizzly bear population may benefit other species by providing suitable habitat. For example, areas where road accesses are adequately managed benefit species such as elk. Although grizzly bears are omnivores, and predation of ungulates, such as elk, deer and moose, does occur, the overall impact of an expanded grizzly bear population on other populations of wildlife is, however, expected to be minimal. As a result, it should not be necessary to adjust hunting seasons to compensate for grizzly bear predation on other wildlife.

While adverse impacts to other wildlife species as a result of this program should be minimal, there is the potential that population levels of black bears could decline due to increased competition for resources as grizzly bears expand into currently unoccupied habitats. Based on the current status of black bears in, and adjacent to, areas currently occupied by grizzlies in Montana, impacts are not anticipated to be significant.

Many factors influence and affect the local social and economic environment. Regardless of this plan, recreational use is likely to increase over the next decade due to human population growth in many western counties and an increase in people seeking outdoor recreational opportunities (see Recreational Opportunities, page 15). Users would be affected to varying degrees by the perceived level of grizzly bear use, grizzly bear-human conflicts, and information and education about recreating in bear country. People uncomfortable recreating in bear occupied areas may shift their use patterns to include areas likely to be unoccupied by bears and/or utilize areas such as developed campsites and heavily utilized day use trails in bear county. For many people, however, recreating in grizzly bear habitat is an attraction. Tourists from surrounding states as well as nationwide may be drawn to western Montana. As a consequence, grizzly bear-human conflicts and human-caused mortalities have the potential to increase with increased contact between bears and humans.

An expanding bear population could result in increased economic benefits to western Montana. Many people travel to or relocate to Montana because of the states diverse and abundant wildlife resources. Furthermore, the value of many properties in Montana is enhanced by the presence of wildlife and the opportunities for associated recreation and potential harvests.

A variety of agricultural and livestock enterprises also exist across the 17-county region. As bears expand into areas outside the recovery zones, the potential exists for operators to be impacted by their presence. Grizzly depredation on domestic livestock would likely be minimal initially; however, as the bear population increases and expands into areas outside the recovery zones, the incidence of depredation could increase. Likewise, orchard and apiary (including commercial, pollination, landowner and hobbyists) operators, could experience income loss due to bear presence. As the costs of bear damage and depredation fall on the individual rancher or producer, economic losses and increased management costs due to livestock depredation, and damage to apiaries and orchards could be significant to individual producers but are unlikely to affect the overall industry.

Over the long term, agencies that manage lands in western Montana could see increased costs due to regulations regarding expanded attractant storage rules and habitat management changes. Most of these changes are already occurring in the areas that could be occupied by grizzly bears in the near term, and the public has clearly indicated support for these efforts. Also, because grizzly bears have always had and will always have a high public profile, public pressure could result in FWP and other agencies reprioritizing programs to focus additional effort on grizzly bear management. It is FWPs hope that by managing grizzlies as one component of our wildlife program such reprioritization would have minimal affect on other programs.

Cumulative Effects

The following discussion of cumulative effects is a synopsis of the analysis of effects presented in the previous section. A cumulative effect is generally defined as the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Such impacts can result from individually minor yet collectively significant actions taking place over a period of time.

Past, present and reasonably foreseeable actions may affect grizzly bear habitat. Of concern are cumulative effects on grizzly bears due to increasing rural settlement and subdivisions on private lands. Irrespective of this plan, such changes would occur, and could affect the bear's use of habitat and movement between habitats. In addition, bears that spend more time at lower elevations have more conflicts with humans and experience a higher level of mortality. It is possible that increased development of lower elevation sites will lead to an increase in such adverse effects.

Rural economies are changing in western Montana and the cumulative impacts resulting from livestock and agricultural losses attributed to grizzly bears and other predators could further decrease the ability of long term operators to persist in this environment. Adverse impacts could result if additional ranch land were sold for conversion into subdivisions and residential developments.

As grizzly bears expand into areas outside the recovery zones, black bear hunting could have indirect cumulative adverse impacts on grizzly bears, particularly in areas with lower grizzly bear population levels. Grizzly bears have the potential to be killed either through mistaken identity or conflicts with hunters. Restrictions on hunting in grizzly bear habitat could result in both beneficial and adverse effects to the bear. Restrictions could result in fewer hunter-related grizzly bear mortalities, but may also reduce the availability of carcasses and gut piles for grizzly bears. In addition, restrictions would antagonize hunters and others who traditionally utilized such areas, leading to erosion of public trust and support for the grizzly bear program and increased "vandal" killing.

Mitigation

An adaptive management approach affords FWP the opportunity to manage the population of grizzly bears in western Montana with a fair degree of flexibility to meet different needs and expectations. Many of the management tools outlined throughout this plan are designed to mitigate the potential for negative impacts of an expanding bear population while maximizing the benefits to the degree possible in a complex biological, social and economic environment.

While there are many benefits to expanded grizzly bear populations, there is no denying that there will be impacts to livestock producers and property owners due to conflicts with grizzly bears as the population expands. Implementing the programs recommended in this document will minimize those impacts through prevention, where possible, and adequate management if conflicts occur. Moreover, as the cause, severity, and appropriate response to human-bear conflicts often varies considerably from one incident to another, FWP has developed programs that utilize a broad range of management applications to mitigate adverse impacts.

Information and education remains a critical component under any alternative to minimize grizzly bear-human conflicts. Programs have been developed that emphasize providing people with the information they need to reduce the potential for human-grizzly conflicts that could lead to injury or loss of human life, or human-caused grizzly mortality while maintaining traditional residential, recreational and commercial uses of the areas into which the grizzly is or may be expanding. Coordinated management of nuisance bears, food storage orders, and information and education efforts would minimize conflicts and grizzly bear mortalities under all alternatives.

Mitigating bear losses due to hunting activity through education programs is another key component and FWP will continue efforts aimed at evaluating hunter education programs such as its bear identification requirements. Strengthening the program through adjustments such as implementing mandatory annual training courses for black bear hunters statewide, or for specific hunting districts, would reduce losses.

Implementing the road density standards as recommended is already occurring for other management purposes (erosion control, water quality, etc.) and is allowing for some expansion in the bear population. Future adjustments may be necessary.

In summary, as required in Section 12.2.431. of the Administrative Rules of Montana, throughout the process of developing this DPEIS, FWP evaluated the significance of impacts resulting from the proposed implementation of this grizzly bear program for western Montana. The Department has determined that although impacts could occur, our commitment to mitigation should reduce their significance. As a result, FWP does not anticipate any significant impacts that cannot be addressed through mitigation.

Irreversible and Irretrievable Resource Commitment

This section describes irreversible and irretrievable commitments of resources associated with implementation of the proposed grizzly bear management program outlined in this DPEIS. A resource commitment is considered irreversible when impacts from its use limit future use options. Irreversible commitment applies primarily to nonrenewable resources, such as fossil fuels or minerals, and to those resources that are renewable only over long time spans, such as soil productivity. A resource commitment is considered irretrievable when the use or consumption of the resource is neither renewable nor recoverable for use by future generations. In essence, irretrievable resource commitments involve the

loss in value of an affected resource that cannot be restored as a result of the proposed action or preferred alternative. Such commitments include expenditure of funds, loss of production or restrictions on resource use.

With few exceptions, the programs recommended in this document should not result in any irretrievable commitment of resources. If expansion of bears proves untenable in some areas, FWP has demonstrated the ability to remove bears. Likewise, habitat programs and access management can be reversed or revised if needed. The level of recommended mortality will not result in any irretrievable commitment of the grizzly bear resource and should allow it to flourish. Because these levels of removal can be regulated or eliminated on an annual basis, or even short time basis (should data indicate that to be prudent), the management program poses no threat to the species, and should benefit it.

Conversely, because the grizzly bear and other Montana wildlife serve as a major component of our quality of life in Montana and this is attracting new residents and an expanding human population, the state is seeing some additional commitment of resources. Subdivisions, energy development, and other "land development" programs are slowly but steadily altering grizzly habitat. While Montana officials can moderate this loss to a degree by allowing the bear population to expand into currently unoccupied habitats and by managing occupied habitats to meet their needs, we as a people will ultimately have to forego some things to allow grizzlies to survive at viable levels. These issues will be decided by the citizens of Montana and the nation through the appropriate political and social processes.

Finally, grizzly bears are large and potentially dangerous animals. By their presence, they pose some risk to the human inhabitants of the state and to visitors. Current information shows that this risk is very real, but at a surprisingly low level. Considering all of the people and activities that currently occur in grizzly habitat, and how few injuries or deaths occur, the level of risk is low. In addition, the programs outlined in this plan should allow for management and further minimization of the risks of living with grizzlies.

No environment is totally risk free for people. Through education, understanding, and science-based wildlife management, we the people of Montana and this nation can minimize the risks of injury and/or death from grizzlies.

GLOSSARY

Abbreviations and Acronyms

ARM -- Administrative Rules of Montana
ATV -- All terrain vehicle
BLM -- Bureau of Land Management
CEM -- Cumulative Effects Model
COY -- Cubs of the Year
CYE – Cabinet-Yaak Ecosystem
DNA -- Deoxyribonucleic acid -- the molecule that encodes genetic information
DNRC -- Department of Natural Resources and Conservation
DPEIS – Draft Programmatic Environmental Impact Statement
EIS -- Environmental Impact Statement
FWP -- Montana Department of Fish, Wildlife and Parks
GIS -- Geographic Information System
GYE -- Greater Yellowstone Ecosystem (includes all lands in or adjacent to Yellowstone National Park)
IBA -- International Association for Bear Research and Management
IGBC -- Interagency Grizzly Bear Committee
MCA -- Montana Codes Annotated
MDOT -- Montana Department of Transportation
MEPA -- Montana Environmental Policy Act
MFGC -- Montana Fish and Game Commission
MFWPC -- Montana Fish, Wildlife & Parks Commission
MOU -- Memorandum of Understanding
NCDE – Northern Continental Divide Ecosystem
NEPA -- National Environmental Policy Act
PCA -- Primary Conservation Area
PEIS -- Programmatic Environmental Impact Statement
USC -- United States Congress
USFS -- United States Forest Service
USFWS -- United States Fish and Wildlife Service

Selected definitions

Adaptive management: a model for grizzly bear conservation and management that uses and incorporates information from ongoing monitoring and research to direct appropriate conservation action. Specifically, it is the integration of program design, management, and monitoring to systematically test assumptions in order to *adapt* and *learn*. The model incorporates resource objectives, monitoring protocols to test assumptions, evaluation of predicted outcomes, a decision making process, and clear communication of results.

Conflict bear: any grizzly bear involved in bear/human conflicts resulting in agency management activities.

Cumulative effects model. a model that evaluates the cumulative effects of human activities on grizzly bears and their habitat; cumulative effects result from individually minor yet collectively significant uses occurring over space and time.

Depredation: damage to any property including agricultural products.

Habitat effectiveness: reflects an area's actual ability to support bears i.e. it is the value of a landscape to bears in the presence of human activities.

Food conditioned: a bear that has received a significant reward of non-natural foods such as garbage, camp food, pet food, grain, corn, or processed livestock food and persistently seeks those foods.

Habituated: when a bear does not display avoidance behavior around humans or in human use areas such as camps, residential areas, or along roads.

Lethal control: management actions that result in the death of a grizzly bear.

Natural aggression: defense of young, food, during a surprise encounter, or self-defense.

Non-lethal control: a variety of management activities intended to avert or resolve a conflict situation without killing the grizzly bear in question.

Primary conservation area: area that contains the minimum seasonal habitat components needed to support a recovered grizzly bear population. Should a population recover, a PCA for this population would be delineated that may differ to the original recovery zone, pending further analysis.

Relocation: the capture and movement of a bear involved in a conflict with humans or their property by management authorities to a remote area away from the conflict site.

Repeat offense: the involvement of a bear that has been previously relocated in a conflict situation or continues to repeat a behavior that constituted a human/bear conflict.

Removal: the capture and placement of a bear in an authorized public zoological or research facility or destruction of the bear. Removal can also involve killing the bear through active measures in the wild when it is not otherwise possible to capture the bear.

Sustainable off-take: maintenance of the bear population at a level where the number of deaths does not exceed the sustainable mortality level.

Unacceptable aggression: grizzly bear behavior that includes human injury or death when unprovoked by surprise, food, etc., approaching humans or human use areas, such as camps, in an aggressive way, or aggressive behavior when the bear is also unprovoked by self-defense, defense of cubs, defense of foods, or in a surprise encounter.

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