Montana Fish, Wildlife & Parks

Grizzly Bear Management in Montana

May 15, 2014

4 Different Recovery Areas in MT:

- Greater Yellowstone Ecosystem (GYE) (Map on Page 2)
- Northern Continental Divide Ecosystem (NCDE) (Map on Page 3)
- Cabinet-Yaak Ecosystem (CYE) (Map on Page 4)
- Bitterroot Ecosystem

Greater Yellowstone Ecosystem (GYE)

- 2013 Estimate 629/740 (2008-596; 2009-582; 2010-602; 2011-593; 2012-610)
- Currently Listed as Threatened
- SW MT Management Plan finalized in 2002, Updated in 2013
- Interagency Conservation Strategy finalized in 2007; Modifications to demographic criteria underway.
- Using "new" population estimation method, 2013 estimate is 740
- Delisted in 2007; Challenged in part due to failure to address Whitebark Pine declines
- Delisting Rule vacated in 2009 by order of federal court ruling
- Food Synthesis Report completed in 2013 (http://www.nrmsc.usgs.gov/files/norock/IGBST/IGBST_FoodSynReport120213.pdf)
- Proposal to delist expected in late 2014
- Delisting expected in 2015
- Mortalities will be managed post delisting per the Conservation Strategy agreements (Independent female mortality <7.6% of pop; independent male <15% of pop)
- Mortalities will be managed cooperatively between ID, WY, and MT.
- **http://www.fws.gov/mountain-prairie/species/mammals/grizzly/yellowstoneindex.html**

Northern Continental Divide Ecosystem (NCDE)

- 765 bears estimated in 2004 (DNA study); increasing at rate of 3.06%/year since
- 2011 population estimate = 942 bears. At 3% trajectory, U.S. population is approx. 1,000 bears
- Currently listed as Threatened
- Western Montana Management Plan completed in 2006
- Interagency Conservation Strategy Draft completed in 2012; Final expected in 2014
- Proposal to delist expected in 2015
- Delisting in 2016
- Mortalities will be managed post delisting per the Conservation Strategy agreements. Still being worked on (independent female <10%; independent male <20%)
- Mortalities will be managed cooperatively between MT, CSKT, Blackfeet Tribe
- **http://www.fws.gov/mountain-prairie/species/mammals/grizzly/continentalindex.html**

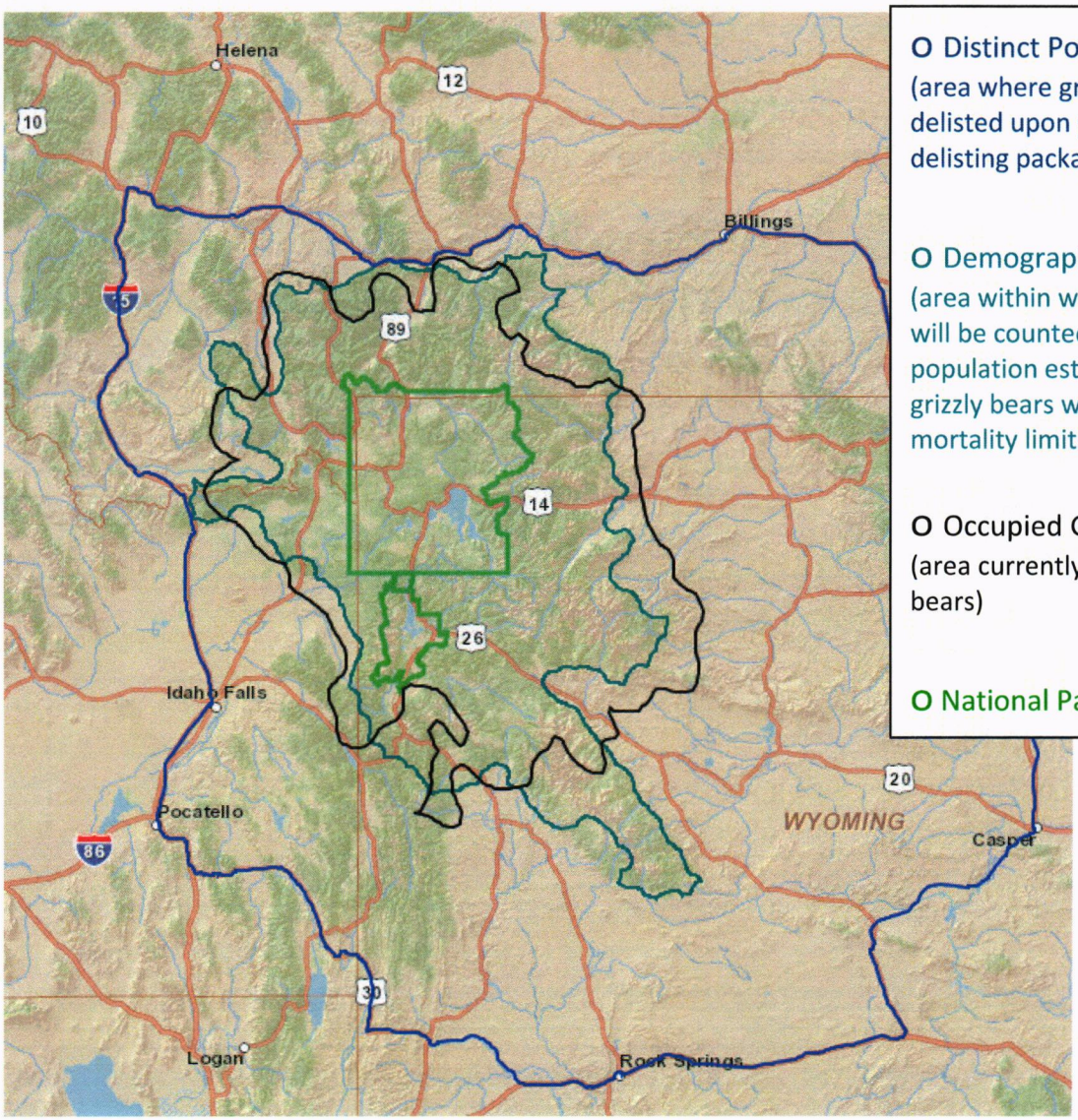
Cabinet-Yaak Ecosystem

- 2012 Population Estimate is 45-55
- Recovery standard is 100
- Currently Listed as Threatened
- Lawsuit recently filed to force USFWS to reclassify to Endangered
- Augmentation efforts ongoing

Bitterroot Ecosystem

- Currently no known grizzly bears in this recovery area
- Proposal for Reintroduction in 2000; Bears would have been classified as Experimental-Nonessential; Never funded by Congress
- If bears naturally repopulate – they would be considered Threatened
- Griz bear accidentally killed by black bear hunter in Kelly Creek in 2007. Genetics indicate it came from Selkirks.

2014 Boundary Map of the Greater Yellowstone Ecosystem, Grizzly Bear Management Zones

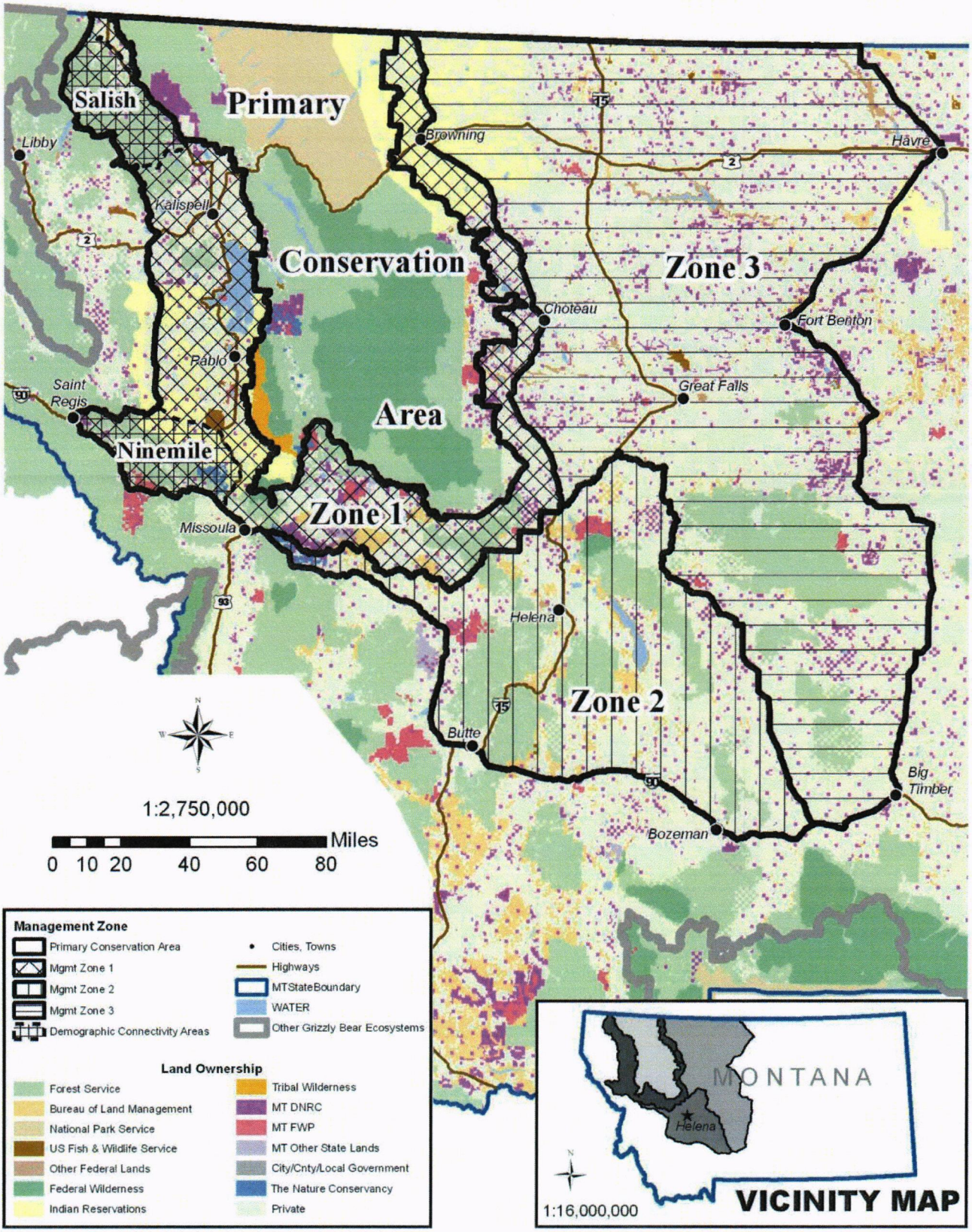


O Distinct Population Boundary
(area where grizzly bears will be delisted upon passage of a USFWS delisting package)

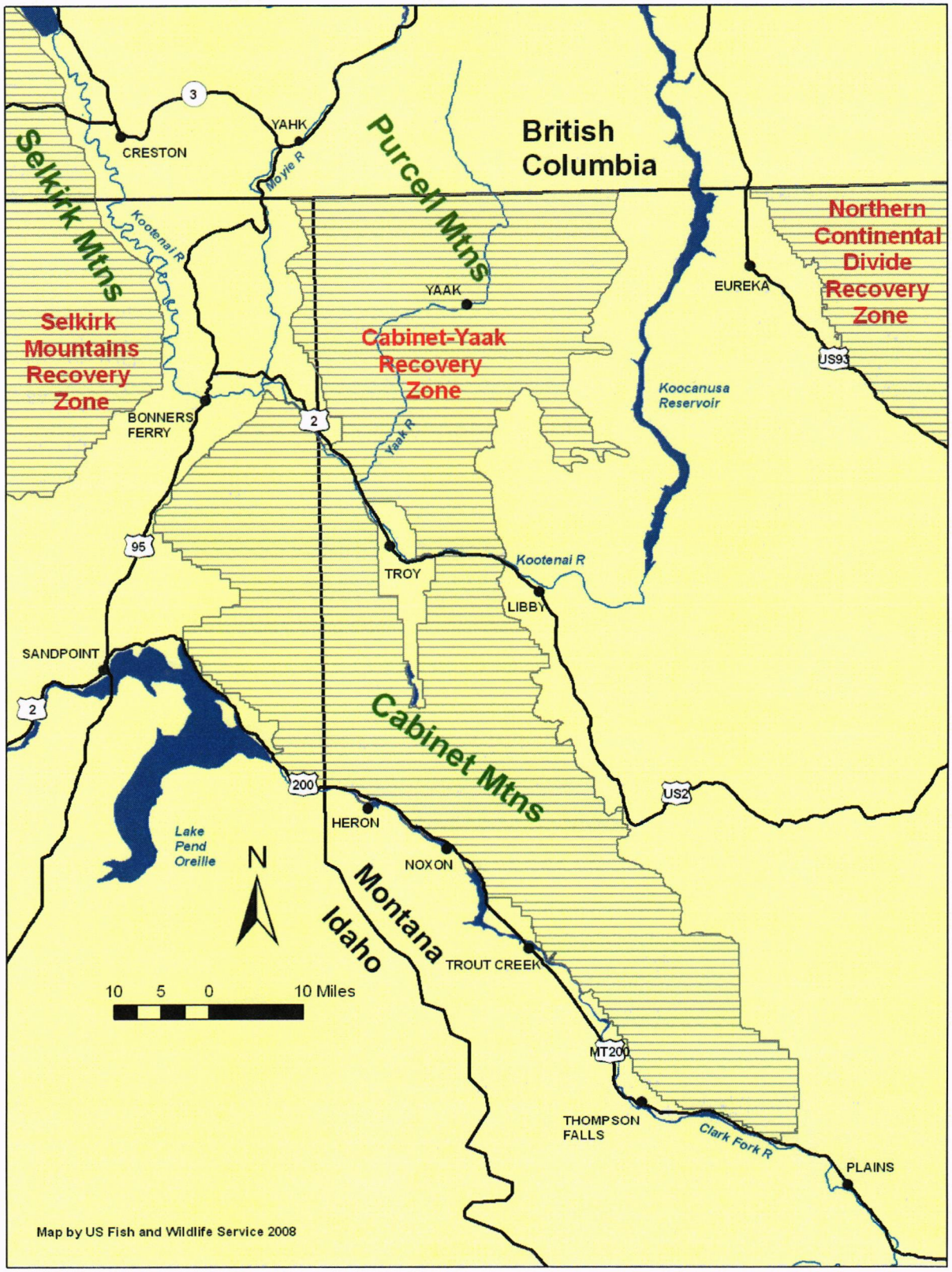
O Demographic Monitoring Area
(area within which live grizzly bears will be counted towards a population estimate and dead grizzly bears will be counted against mortality limits)

O Occupied Grizzly Bear Range
(area currently occupied by grizzly bears)

O National Park Boundaries



Grizzly bear management zones specified in the Conservation Strategy. The Salish and Ninemile Demographic Connectivity Areas within Zone 1 are delineated by cross-hatching.



Cabinet Yaak Recovery Area

GRIZZLY BEAR

Management Plan for Southwestern Montana
2013

FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

Prepared by:

Montana Fish, Wildlife & Parks

December 2013

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ACKNOWLEDGEMENTS

Many people participated in development of this plan but Montana Fish, Wildlife and Parks would specifically like to thank Mark Haroldson of the Interagency Grizzly Bear Study Team for his time and assistance in document preparation and review.

INTRODUCTION

Process for Plan Development

Montana Fish, Wildlife & Parks (FWP) developed the original grizzly bear management plan and programmatic environmental impact statement (EIS) for grizzly bear management in southwest Montana in 2002. The management plan and EIS was effective for a ten year period (2002-2012). At that time, the process involved a series of meetings with affected agencies, governments, and interested persons. FWP initiated the scoping process with discussion of potential issues and alternatives with biologists, wardens, and representatives from Idaho and Wyoming during the summer of 2000. Following those preliminary efforts, FWP held a series of 13 public scoping meetings in southwestern Montana. A draft plan was released for public comment in April, 2002. Formal public hearings were conducted and public comment was also accepted in writing for 90 days. All comments were used to assist in preparing the final plan. Development of the plan was further guided by recommendations of a group of citizens referred to as the Governors' Roundtable. The Roundtable was able to reach unanimous agreement on 26 recommendations that guide grizzly management to this day. FWP's southwest Montana grizzly bear management EIS was finalized and published in 2002.

Since development of that EIS the *Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area (CS)* has been published (2007) and numerous policies and Montana Codes have been adopted, altered, or removed relative to grizzly management. Public involvement was inherent in development of these guiding documents and policies, and as such, public comment and input has been a part of grizzly bear management since the first EIS. FWP did not deem it necessary to conduct formal scoping for development of this revision of the 2002 EIS. Public scoping in essence is a continual part of grizzly bear management as managers must address new and ever changing environments, biological states, and social tolerance in routine decision making.

The purpose of the CS is to "describe and summarize the coordinated efforts to manage the grizzly bear population and its habitat to ensure continued conservation in the Greater Yellowstone Area (GYA); specify the population, habitat, and nuisance bear standards to maintain a recovered grizzly bear population for the foreseeable future; document the regulatory mechanisms and legal authorities, policies, management, and monitoring programs that exist to maintain the recovered grizzly bear population; and document the commitment of the participating agencies" (CS 2007). This EIS document works from the standards and commitments within the strategy providing state specific information or guidance where appropriate. Guidance within this state plan does not differ from the standards and guidance provided within the CS.

Montana Fish, Wildlife and Parks Goals for the Grizzly Bear

FWP has statewide goals for most wildlife resources. This plan specifically deals with the goals for managing grizzly bear resources in southwestern Montana. These goals are:

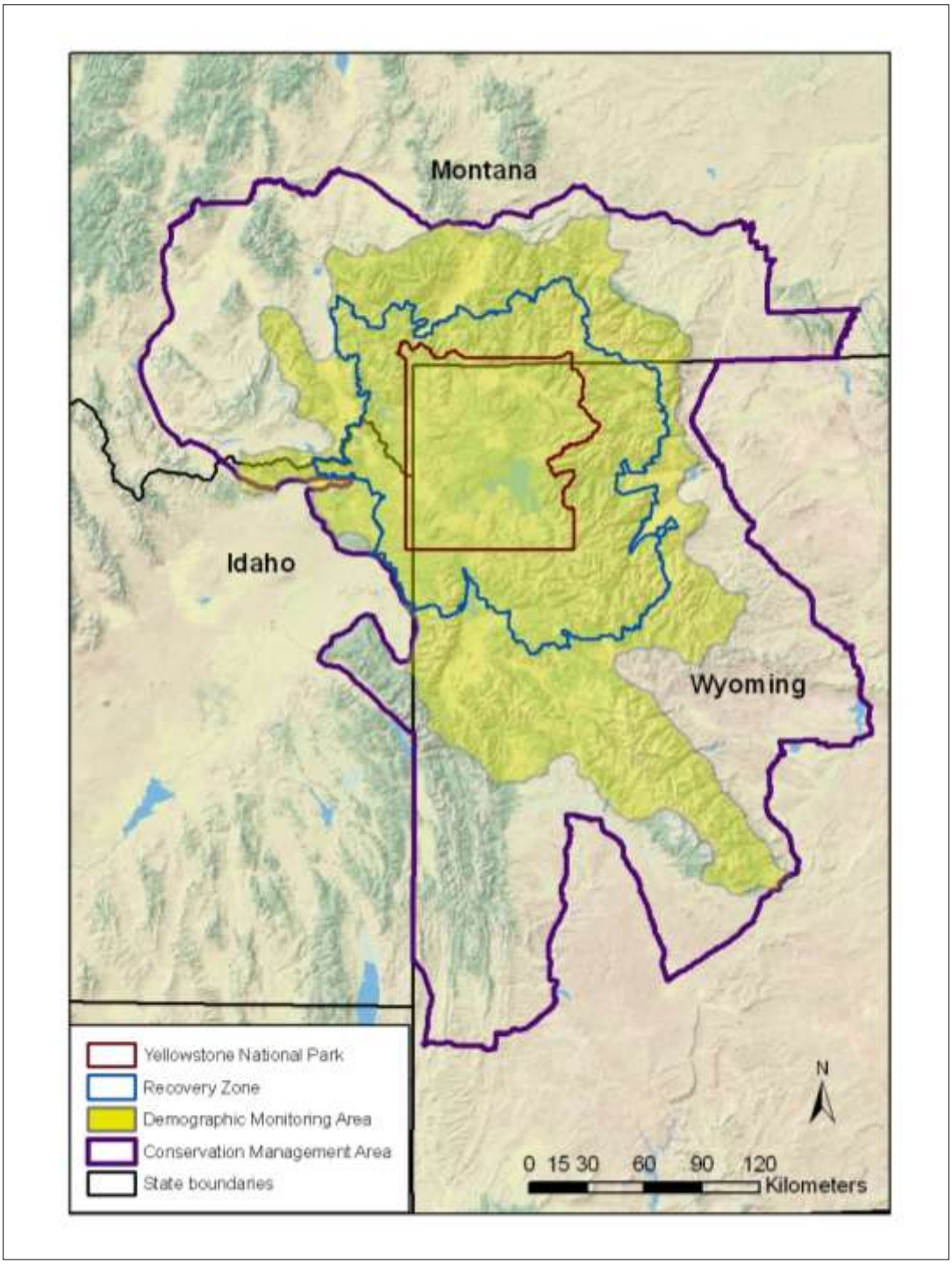
1. To protect, perpetuate, enhance, and regulate the wise use of wildlife resources for public benefit now and in the future.
2. To manage for a recovered grizzly bear population in southwestern Montana and to allow for grizzly populations in areas that are biologically suitable and socially acceptable. 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. These efforts will provide some regulated hunting when and where appropriate while maintaining a recovered population under the required demographic criteria for grizzly bears in the Greater Yellowstone Ecosystem.
3. To provide the people of Montana and visitors with optimum outdoor recreational opportunities emphasizing the tangible and intangible values of wildlife, and the natural and cultural resources 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.

These goals will be achieved by addressing the following: population management, future distribution, habitat and restrictions on human use of bear habitat, human safety, nuisance bear management, livestock conflicts, property damage, hunting of grizzlies, enforcement, education and outreach, and funding. The success of grizzly bear management in Montana will be contingent upon FWP's ability to address these issues in a way that builds and maintains tolerance for grizzlies.

The recommendations originally developed by the Governor’s Roundtable are still pertinent today and support continued management of the proposed Primary Conservation Area (PCA), or Recovery Zone plus a 10 mile buffer area, as a secure "core" area for grizzly bears within the Yellowstone Ecosystem (Figure 1). The group also recommended that the states of Wyoming, Idaho and Montana develop management plans for the areas outside the PCA to:

1. Ensure the long-term viability of bears and avoid the need to relist the species under the Endangered Species Act (ESA),
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.

Figure 1. Greater Yellowstone Area depicting the original Recovery Zone for the Yellowstone grizzly bear, the Conservation Management Area (no longer being used for management per publication of this draft but shown as reference) and the Demographic Monitoring Area where the grizzly population is intensely monitored. The Primary Conservation Area is the Recovery Zone plus a 10 mile buffer.



Purpose and Need

The need for an update to the 2002 grizzly bear management plan was precipitated by changes in bear management in the Yellowstone Ecosystem during the 1980-90's, that resulted in increasing numbers and an expanding distribution of grizzly bears. In 2007, after the initial delisting of the Yellowstone grizzly bear, the United States Fish and Wildlife Service (USFWS) amended the recovery plan and CS to monitor grizzly bear population dynamics and mortalities in the area known as the Conservation Management Area (CMA) Figure 1). The CMA includes the areas beyond the original recovery line and the USFWS suitable habitat line. In the last decade, an increase in grizzly bear population and distribution, along with land management, wildlife management, and recreation management within the CMA have led to established populations of bears outside the core area and throughout what is currently the CMA.

Since publication of the first draft of this document, the USFWS has revised the demographic criteria within the Recovery Plan for the GYA. As part of this revision the area beyond the suitable habitat line and out to the CMA boundary has become irrelevant to management decisions. Therefore, this final plan, discusses management only along the Demographic Monitoring Area (DMA) line and the Recovery Zone line. (USFWS, Supplement to the Demographic Recovery Criteria of the Greater Yellowstone Grizzly Bear in *draft* to be published in 2014,)

It is FWP's objective to maintain existing renewable resource management and recreational use where possible and to develop a process where FWP, working with local publics, can respond to grizzly/human conflicts with appropriate and timely management actions. Maintaining existing uses while allowing people to continue their lifestyles, economies, and feelings of well being builds support and increases tolerance for grizzly bear populations.

In the 2002 EIS, the Governors' Roundtable produced a recommendation to allow grizzly bears to inhabit areas that are "biologically suitable and socially acceptable." This recommendation has been followed since implementation of that EIS and FWP will continue this approach with the current responsible management program. The level of social acceptance of grizzlies in historical habitat changes based on how the issues are approached, the density of the bear population and how much faith people have in wildlife managers. To maximize the area of Montana that is "socially acceptable" grizzly bear range, the state planning and management effort has used an adaptive learning process to develop innovative, on-the-ground management. By demonstrating that grizzly bear conservation can be integrated with broad social goals, public faith in management can be enhanced and human tolerance of grizzly bears is developed and maintained. This approach already has demonstrated success in the GYA as well as in northwestern Montana, where bear populations have also increased and bears have reoccupied habitats from which they had been absent for decades.

In 2000, the Interagency Grizzly Bear Study Team (IGBST) began a process to reevaluate and update methods to determine the status of the GYA grizzly bear population, estimate population size, and determine the sustainable level of mortality in the GYA. In 2007, the USFWS supplemented the 1993 federal Grizzly Bear Recovery Plan with revised demographic criteria for the GYA population (72 FR 11376, March 13, 2007) and in 2013, the USFWS proposed to designate a new 'demographic monitoring area'(DMA) within which population and mortality

data (i.e., demographic criteria) would be assessed. There is consensus among scientists and statisticians that the area within which mortality limits apply should be the same area used to estimate population size. The previous CMA within which grizzly bear mortalities were counted against annual sustainable limits, was substantially larger than the area within which female grizzly bears with cubs of the year were surveyed and used to estimate population size. This meant researchers were counting mortalities in areas where bears weren't being monitored for population size or trend. The revised DMA addresses this known bias so that mortalities and population health and size will be monitored within the same area. This proposed change, if finalized, would be appended to the Yellowstone chapter of the Grizzly Bear Recovery Plan (U.S. Fish and Wildlife Service 1993, p. 44) and the Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area.

Overtime grizzly bears from the Yellowstone area are expected to inhabit areas throughout the DMA however not all areas are biologically suitable or socially acceptable for grizzly bear occupancy. Mortalities outside of the DMA would continue to be recorded and reported but would not count against the sustainable mortality limits for that year. Grizzly bear occupancy would not be actively discouraged outside the DMA, rather management emphasis would be on conflict response. Grizzly bears would not be removed from the population just because they are outside the DMA but, as is the case anywhere within southwest Montana, they may be removed from the population or relocated if there are conflicts. Grizzly bears may also be preemptively relocated to avoid conflicts, but their potential contribution to connectivity with other grizzly bear populations would be considered in any such preemptive moves. Preemptive moves would not be counted against a bear as a management conflict capture would.

Significance of grizzly bear management to the people of Montana is highlighted by the fact that the state contains all or portions of four of the six distinct populations identified by the USFWS plan for grizzly recovery in the lower 48 states. The species is Montana's "State Animal," and there is specific policy directing management of the species. Grizzly bear populations have increased to USFWS recovery levels in the Yellowstone and the Northern Continental Divide area. The small population of grizzly bears in the Cabinet-Yaak area of Montana appears to be slowly increasing. Only one grizzly bear has been documented in the Bitterroot ecosystem since 2002.

This plan deals directly with that portion of Montana known as the GYA and adjacent lands in southwestern Montana and includes our management programs within the PCA. The GYA has been defined in many different ways by different people depending on their purposes. For the purpose of this plan, the GYA is defined very broadly for southwestern Montana to include lands that may be accessed by grizzly bears in the near future.

Before discussing the different issues and alternatives this plan addresses, it is important to keep the following perspectives in mind.

- Public support and tolerance for grizzlies is the key to their long-term recovery and re-occupancy of suitable habitats, and this support is contingent on local involvement and active local participation in plan development and implementation.
- All of the biological and social issues are interrelated, and no one part of the plan can function effectively without the others.

- This plan does not presuppose habitat problems exist with bear re-occupancy, but instead approaches the issues with the perspective of making sure local people are involved and given sufficient tools to respond to management changes as 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 about how bears will utilize some of the available habitats.
- This plan and its implementation must respond as changes occur and be open to public scrutiny and input.

Other Agencies that have Jurisdiction or Responsibility

At present, the USFWS is responsible for grizzly bear recovery and management activities. Federal laws, rules and regulations provide guidance. When grizzlies are delisted and management authority is transferred to the State of Montana, state law becomes the primary regulatory and legal mechanism guiding management. Two titles within Montana statutes describe the legal status and management framework for grizzly bears. Title 87 pertains to all fish and wildlife species and oversight by FWP. Title 81 pertains to the Montana Department of Livestock (MDOL) and its responsibilities for predatory animal control. Montana statutes assign joint responsibility to FWP and MDOL for managing wildlife that cause property damage, i.e. injury or loss to livestock, through a cooperative agreement with MDOL. Wildlife Services (WS) conducts field investigations and management activities in cases of property damage caused by wildlife such as black bears, grizzly bears and wolves. Grizzly bear depredations to livestock are cooperatively investigated and managed by WS and FWP.

The U.S. Forest Service (USFS), the National Park Service (NPS), the Bureau of Land Management (BLM), USFWS, or other federal jurisdictions administer federally owned lands. These agencies manage these lands according to their enabling legislation, agency mission, and relevant federal laws, rules, and regulations. FWP coordinates with federal agencies on wildlife and habitat issues of mutual interest but has no legal jurisdiction over how those lands are managed. NPS has jurisdiction for wildlife within national parks.

Montana's Native American tribes have jurisdictional authority for wildlife conservation and management programs within reservation boundaries. FWP coordinates with tribal authorities on issues of mutual interest.

Recent History of Bears in the Greater Yellowstone Area

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), closing seasons, etc., had the effect of allowing grizzlies to survive in portions of western Montana.

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, the regulations and laws failed to address a more fundamental issue: the protection of fish and wildlife habitat.

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 mirrored in large part the National Environmental Policy Act (NEPA) adopted by Congress in 1969.

High mortality rates resulting from closure of the remaining open dumps in Yellowstone National Park (YNP), raised concerns over the status of the grizzly population in the greater Yellowstone area 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 ESA in 1975. As a result of this listing, many management changes were made to benefit grizzlies. A federal recovery plan was prepared and approved in 1982 and revised in 1993. The success of recovery efforts is evident in the estimates of bear numbers in the area, increasing from approximately 230 in the late 1960s to a minimum of 600 bears today. This has set the stage for delisting of the population segment and a return of this population to state and national parks management.

Recent Litigation History

March 2007 – The USFWS announced that the GYA population of grizzly bears was recovered effectively removing the species from the Federal list of threatened and endangered species.

September 2009 – The Federal District Court in Missoula issued an order vacating the delisting of the GYA grizzly population. In compliance with this order, the Yellowstone grizzly population was once again designated a threatened population under the ESA. The District Court ruled that the USFWS was arbitrary and capricious in its evaluation of white bark pine and that the regulatory mechanisms identified in the final rule were not adequate because they were not legally enforceable.

November 2011 – The 9th Circuit Court of Appeals issued an opinion affirming in part and reversing in part the district court's decision vacating the final rule delisting GYA grizzly bears. The Appellate court affirmed the USFWS's determination that existing regulatory mechanisms are adequate to protect grizzlies in the Yellowstone area while ruling that the USFWS had failed to adequately explain its conclusion that the loss of whitebark pine was not a threat to the population. In compliance with this order, the GYA population of grizzly bears remains federally listed as "threatened" under the ESA while more recent scientific data is considered.

Policy and Statute

MEPA rules provide for the preparation and distribution of an environmental analysis evaluating state actions, programs or policies that affect the quality of the human environment (MCA 12.2.428). Grizzly bear management in Montana is being addressed within the framework of MEPA and its requirements.

The Montana Fish and Wildlife Commission (Commission) is the policy making body for FWP's fish and wildlife programs. Section 87-1-301(1), Montana Codes Annotated (MCA) requires the Commission to "set the policies for the protection, preservation, and propagation of the wildlife, fish, game, furbearers, waterfowl, nongame 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 through the following rules:

87-2-101. Definitions. As used in Title 87, chapter 3, and this chapter, unless the context clearly indicates otherwise, the following definitions apply: (4) "Game animals" means deer, elk, moose, antelope, caribou, mountain sheep, mountain goat, mountain lion, bear, and wild buffalo.

87-5-301. Grizzly bear -- findings -- policy. (1) The legislature finds that:

(a) grizzly bears are a recovered population and thrive under responsive cooperative management;

(b) grizzly bear conservation is best served under state management and the local, state, tribal, and federal partnerships that fostered recovery; and

(c) successful conflict management is key to maintaining public support for conservation of the grizzly bear.

(2) It is the policy of the state to:

(a) manage the grizzly bear as a species in need of management to avoid conflicts with humans and livestock; and

(b) use proactive management to control grizzly bear distribution and prevent conflicts, including trapping and lethal measures.

87-5-302. Commission regulations on grizzly bears. (1) The commission may:

(a) pursuant to subsection (2), regulate the hunting of grizzly bears, including the establishment of tagging requirements for carcasses, skulls, and hides; and

(b) establish requirements for the transportation, exportation, and importation of grizzly bears.

(2) When special grizzly bear licenses are to be issued pursuant to 87-2-701, the commission shall establish hunting season quotas for grizzly bears that will prevent the population of grizzly bears from decreasing below sustainable levels and with the intent to meet population objectives for elk, deer, and antelope. The provisions of this subsection do not affect the restriction provided in 87-2-702(3) that limits a person to the taking of only one grizzly bear in Montana.

Within this legal framework, the Commission developed a grizzly bear policy in Section 12.9.103, Annotated Rules of Montana, "Whereas, the Montana fish and game commission has management authority for the grizzly bear, a resident wildlife species, and is dedicated to the

preservation of grizzly bear populations within the state of Montana;" That 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 ESA (16 U.S.C. Sec. 1531, et seq.), that specific FWP goals for the grizzly bear were developed.

87-1-217. Policy for management of large predators -- legislative intent. (1) In managing large predators, the primary goals of the department, in the order of listed priority, are to:

(a) protect humans, livestock, and pets;

(b) preserve and enhance the safety of the public during outdoor recreational and livelihood activities; and

(c) preserve citizens' opportunities to hunt large game species.

(2) With regard to large predators, it is the intent of the legislature that the specific provisions of this section concerning the management of large predators will control the general supervisory authority of the department regarding the management of all wildlife.

(3) For the management of wolves in accordance with the priorities established in subsection (1), the department may use lethal action to take problem wolves that attack livestock if the state objective for breeding pairs has been met. For the purposes of this subsection, "problem wolves" means any individual wolf or pack of wolves with a history of livestock predation.

(4) The department shall work with the livestock loss board and the United States department of agriculture Wildlife Services to establish the conditions under which wolf carcasses or parts of wolf carcasses are retrieved during wolf management activities and when those carcasses or parts of carcasses are made available to the livestock loss board for sale or auction pursuant to 2-15-3113.

(5) The department shall ensure that county commissioners and tribal governments in areas that have identifiable populations of large predators have the opportunity for consultation and coordination with state and federal agencies prior to state and federal policy decisions involving large predators and large game species.

(6) As used in this section:

(a) "consultation" means to actively provide information to a county or tribal government regarding proposed policy decisions on matters that may have a harmful effect on agricultural production or livestock operations or that may pose a risk to human health or safety in that county or on those tribal lands and to seek information and advice from counties or tribal governments on these matters;

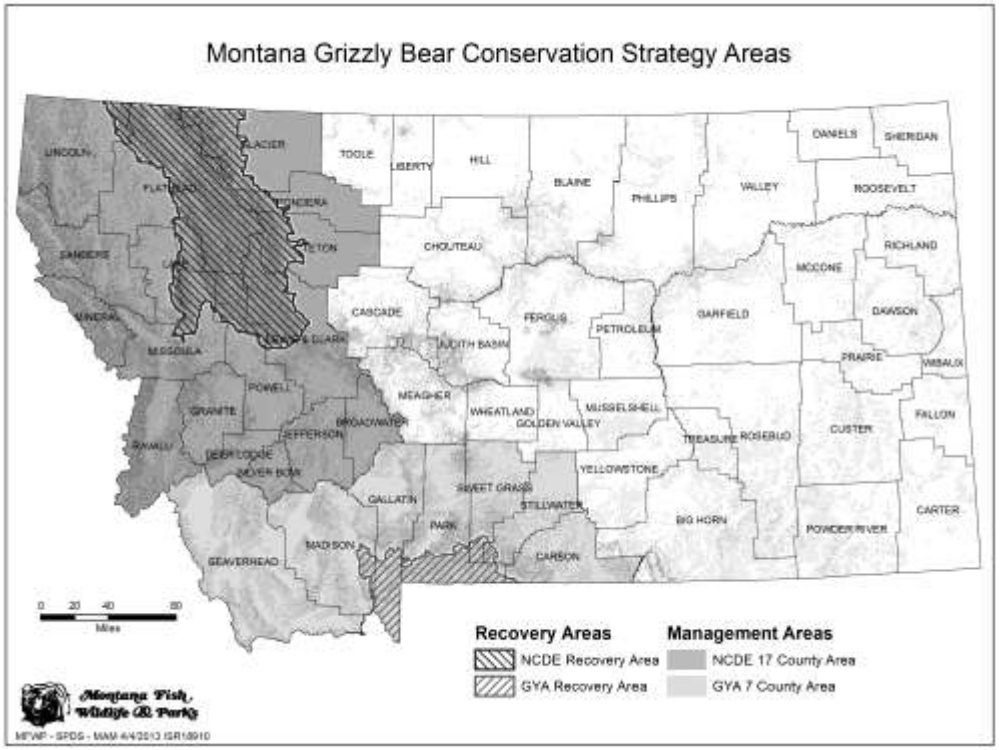
(b) "large game species" means deer, elk, mountain sheep, moose, antelope, and mountain goats; and

(c) "large predators" means bears, mountain lions, and wolves.

DESCRIPTION OF THE GRIZZLY BEAR MANAGEMENT AREA FOR SOUTHWESTERN MONTANA

Grizzly bears currently occupy or have been documented in suitable habitats in the seven southwestern and south-central Montana counties adjacent to or near YNP (Carbon, Stillwater, Sweet Grass, Park, Gallatin, Madison, and Beaverhead counties, Fig. 2). The proposed action of this document is to create and adapt a management plan for this area. The following section briefly describes the geographic and human environment of this seven-county area with respect to geography, size, human population, land ownership, special management areas, agricultural interests, and recreation. Not all portions of these counties are suitable grizzly bear habitat as the above attributes affect the distribution and survival of grizzly bears. Aided by management programs, grizzly bears have expanded distribution beyond the seven-county area recognized in 2002. Expansion is occurring in Montana from the Northern Continental Divide Ecosystem and the Yellowstone Ecosystem. For purposes of this plan, the counties adjacent to but outside of this seven county area fall under management programs described by the Grizzly Bear Management Plan for Western Montana (2006) (Figure 2). The success of these programs rests on coordinating and cooperating with all affected counties, surrounding states and federal agencies. FWP will continue to work with these entities so that the needs of the public and bear population as a whole are met.

Figure 2. The seven counties of the Greater Yellowstone Area that fall under management of the Southwest Montana grizzly plan and the 17 counties of the Northern Continental Divide Ecosystem area that fall under management of the Western Montana grizzly plan. Grizzly bear recovery areas are shown for both ecosystems.



General Description

Each of the seven counties named above is characterized by one or more major river valleys divided by rugged mountain ranges. Elevations range from 12,799 ft. at Granite Peak (Montana's highest point) to about 3,330 ft. on the Yellowstone River near Park City. Major river drainages include the Clark's Fork of the Yellowstone, Stillwater, Boulder, Shields, Yellowstone, Gallatin, Madison, Red Rock, Ruby, Bighole, Wise, Beaverhead, and Jefferson rivers. Several rivers in the western portion of this area flow together to form the Upper Missouri River, beginning at Three Forks. Lower elevation habitats (below 6,000 ft.) vary greatly, including 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.

The mountainous portion of this seven-county area (above 6,000 ft.) contains all or portions of 18 mountain ranges including the Beartooth, Absaroka, Crazy, Bridger, Gallatin, Spanish Peaks, Madison, Henry Lake, Centennial, Gravelly, Snowcrest, Ruby, Tobacco Root, Highland, East Pioneer, West Pioneer, Tendoy, Beaverhead, and Anaconda-Pintler. Mountainous habitats are dominated by coniferous forest (Douglas fir, lodgepole pine, Engleman spruce, whitebark pine, limber pine, ponderosa pine, juniper), and rocky subalpine/alpine communities found above timberline.

Geographic Size and Human Population

The seven-county area encompasses approximately 12,865,088 acres or 20,102 square miles of southwestern and south-central Montana (Table 1). Roughly 14.8% of Montana's human population lives within this area. County population size ranges from 3,600 (Sweet Grass) to 91,000 people (Gallatin). Population density ranges from 1.7 persons per square mile (Beaverhead County) to 34.4 persons per square mile (Gallatin). Major population centers include Bozeman, Livingston, Belgrade, Dillon, Red Lodge, Big Timber, Three Forks, West Yellowstone, and Big Sky.

The population in this seven county area grew by 25% between 2000 and 2011 while the overall population of Montana grew by only 11%. Gallatin County was the fastest growing county, increasing by 43% from 2000-2011 while Park County actually decreased in population by 3%.

Table 1. Selected size, population, and agricultural attributes of the seven counties in the grizzly bear conservation area.

County	Pop.[1]	Size (Sq. Mi.)	People/Sq. Mile	# Cattle[2]	# Sheep[3]	Acres Harvested[4]
Carbon	10,028	22,049	4.9	60,000	5,100	141,887
Stillwater	9,131	1,795	5.1	47,000	7,400	100,258
Sweet Grass	3,623	1,855	2.0	38,000	5,400	51,319
Park	15,469	2,803	5.6	41,000	1,800	60,300
Gallatin	91,377	2,603	34.4	51,000	2,700	155,842
Madison	7,660	3,587	2.1	74,000	3,200	86,550
Beaverhead	9,198	5,542	1.7	110,000	14,600	121,277
Totals	**146,486**	**20,234**	**8.0**	**421,000**	**40,200**	**717,433**
Change since 2002 EIS	**+25%**	**0%**	**38%**	**-16%**	**-37%**	**+3%**

[1]Based on 2011 population estimate (Montana Census Bureau, http://quickfacts.census.gov).
[2]Based on inventory estimates of all cattle and calves for 2012 (Montana Agricultural Statistics www.nass.usda.gov).
[3]Based on inventory estimates of all sheep and lambs for 2012 (Montana Agricultural Statistics).
[4]Based on estimates of irrigated and non-irrigated acres harvested in 2007, (Montana Agriculture Statistics).

Land Ownership

The majority of the mountainous habitat (above 6,000 ft.) is within publicly owned National forests. All or portions of the Custer, Gallatin, and Beaverhead-Deerlodge National Forests occur within this seven-county area. A small portion of mountainous habitat is in Montana Department of Natural Resources and Conservation (DNRC), FWP, BLM, and private ownership, including private subdivisions, ranches, ski resorts, and timber company lands.

Low-elevation river valleys (below 6,000 ft.) are largely privately owned with only a small percentage in state (DNRC, FWP) and federal (BLM, USFS, and U.S. National Wildlife Refuges) ownership (Figure 3). The largest amount of low-elevation land lies within privately owned ranches and farms. 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 seven-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. Portions of four National Wilderness Areas lie within mountain ranges in the seven-county area: the Absaroka-Beartooth Wilderness, Lee Metcalf Wilderness, Bear Trap Canyon Wilderness and Anaconda-Pintler Wilderness. 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 Red Rock Lakes National Wildlife Refuge and eight FWP Wildlife Management Areas. Over half, 6.6 million acres, of the seven county area is in

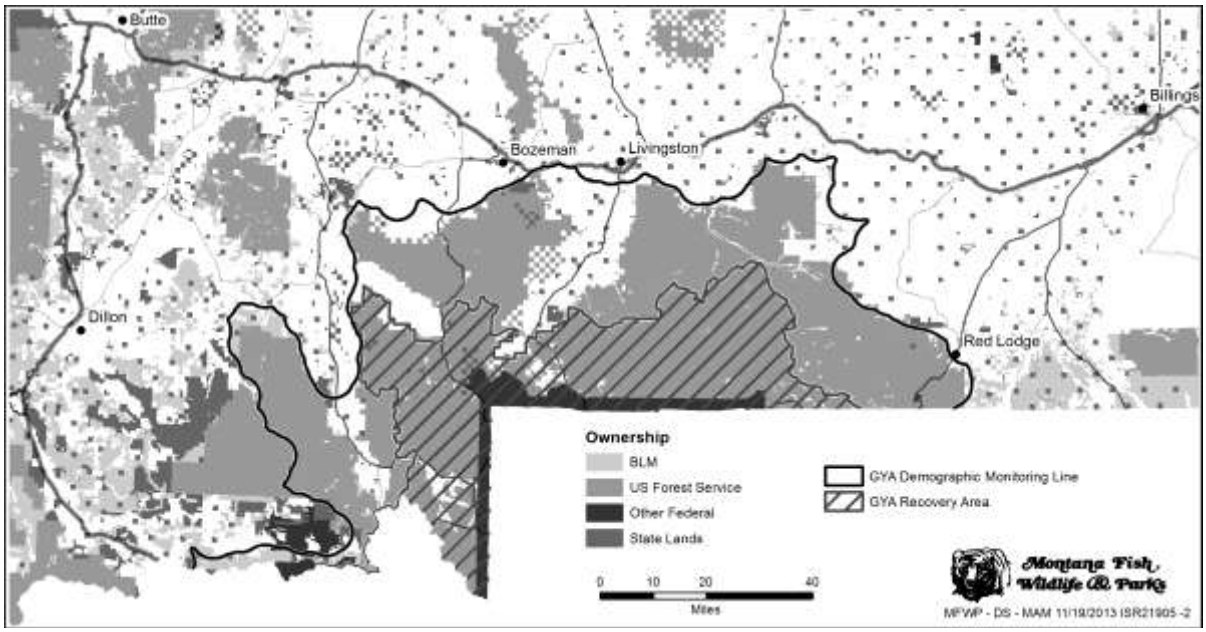
public ownership of some type (Table 2). FWP manages 63,000 of those acres and the USFS has management authority for the majority with 4.4 million acres.

Table 2. Percent of private versus public land, by county, for each of the seven counties covered by this plan.

County	Private property	Public property
Carbon	47%	53%
Stillwater	22%	78%
Sweet Grass	29%	71%
Park	55%	45%
Gallatin	47%	53%
Madison	53%	47%
Beaverhead	31%	69%

Based on land ownership statistics of the Montana State Library:
http://geoinfo.montanastatelibrary.org/geography/geography-facts/montana-county-land-ownership/

Figure 3. Southwest Montana with public lands (shaded), the GYA Recovery Zone boundary, and the Demographic Monitoring Area boundary.



Agricultural Interests

The seven-county area supports a large agricultural economy. The most common activity of these farms and ranches is raising beef cattle and growing forage (hay). In some areas, small grain crops such as wheat, oats, and barley are intensively grown. Horses, sheep, hogs and dairy cattle are also raised but in smaller numbers on ranches and farms in southwestern and south-central 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.

Based on Montana agricultural statistics for 2012, there were an estimated 421,000 head of cattle (all cattle and calves) in the seven-county area, a decrease of 16% since 2002 (Table 1). Beaverhead County had the most cattle (110,000) while Sweet Grass had the lowest number (38,000 head). Beaverhead County ranked #1 in the state for cattle production. In 2012, there were an estimated 40,200 sheep (adults and lambs) in the seven-county area, a decrease of 37% since 2002 (Table 1). Beaverhead County had the largest number of sheep (14,600) while Park County had the fewest (1,800). Beaverhead County ranked #3 in the state for sheep production. In 2007, an estimated 698,275 acres of irrigated and non-irrigated crops were harvested in the seven-county area (Table 1). Number of acres harvested ranged from 51,319 in Sweetgrass County to 155,842 in Gallatin County.

Recreational Opportunities

Outdoor recreation and tourism is a major component of the economy in this seven-county area. Southwestern and south-central Montana is nationally known for its high quality fishing, hunting, camping, hiking, river floating, skiing, snowmobiling, wildlife viewing and sightseeing opportunities. Nearby, YNP attracts 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 private landowners. Recreationists have largely unhampered access to millions of acres of undeveloped land. Much of this land is currently or will be occupied by grizzly bears based on documented trends of increasing distribution. As bear numbers and distribution increase along with increased public use of bear habitat, contact and interaction between bears and people will increase.

SUMMARY OF GRIZZLY BEAR BIOLOGY
(modified from the 2002 Programmatic Environmental Impact Statement (Mincher, B. J., 2000 and Schwartz et al. 2002), new information is cited)

Grizzly bears in this area come in many sizes and colors. The most prevalent color has medium to dark brown underfur, brown legs, hump, and underparts, light to medium grizzling on the head and part of the back, and a light-colored girth band or patch behind the forelegs, but many other variations exist. The size of male and female grizzly bears varies substantially with males about 1.2-2.2 times larger than females. Differences in body mass between males and females are influenced by age at sexual maturity, reproductive status, differential mortality, and season of sampling. During late summer and fall, grizzly bears gain weight rapidly, primarily as fat when they feed intensively prior to denning. Pre-denning weight gain is essential for reproduction and survival because bears rely solely on their stored energy reserves during hibernation. Peak body mass generally occurs in fall just prior to hibernation. Bears metabolize fat and muscle during the denning period.

Habitat

As with any wildlife population, bear density in the Yellowstone area will eventually be limited by geographic area and food resources. Food resources and population density dependence controls wildlife population limits. Yet, grizzly bears are extremely adaptable and exploit a wide variety of habitats and foods throughout their range indicating relatively broad environmental limits. Individual bears may exhibit individual preferences and tolerances. Most key grizzly foods in the GYA occur seasonally and somewhat unreliably. However, grizzly adaptability often compensates for the lack of some forage thought to be critical. Such a generalized approach to survival necessitates a solitary and mobile lifestyle. Individual grizzlies forage over vast areas and have large spatial requirements. The active season for grizzlies is compressed to a 5-7 month period, during which they must gain sufficient weight to supply their energetic needs for the next denning cycle. Bears tend to concentrate their activity in the most productive habitats available because of these high energetic needs.

In general, GYA home ranges are larger than those of other grizzly bear populations. This larger range possibly indicates low environmental productivity in the GYA and increased foraging requirements to meet their nutritional needs or it may be caused more by the wide distribution of favorite foods at different times of the year. Individual ranges of both sexes overlap, but do not appear to be defended, even for adult males. Subadult bears, especially males, disperse from their natal ranges to establish new home ranges, and these spatial requirements probably limit ultimate population density.

As with other bear species and populations, male grizzly home ranges in the GYA are usually larger than female ranges. The Interagency Grizzly Bear Study Team (IGBST) reported mean range sizes from 1975-1987 of 874 km^2 for adult males and 281 km^2 for adult females. Females with new cubs used slightly less area, and those with yearlings used more. New estimates of home range have been calculated for radio-tracked grizzlies in the GYA and indicate some decrease in home range from these earlier estimates (Table 3, IGBST, unpublished data).

Table 3. Minimum convex polygon range estimates (km^2) for grizzly bears radio-tracked in the GYA during 1989-2012. Range estimates were only included for bears that had at least one location during June or earlier in the calendar year, ≥ 10 locations for the active season, and at least one location during September. Individuals that had been transported due to conflicts were excluded after their initial transport.

					95% Confidence Interval (km^2)	
Class	N	Mean (km^2)	Std. Deviation (km^2)	Std. Error (km^2)	Lower Bound	Upper Bound
Subadult F	31	139	132	24	91	188
Adult F with COY	57	154	151	20	114	194
Other adult F	122	127	98	9	109	144
Subadult M	45	545	613	91	361	729
Adult M	104	376	364	36	306	447

In the GYA, the pattern of seasonal elevation use is similar to that found for other populations occupying interior western mountains. Grizzlies utilized carrion and rodents prior to spring green-up, and foraged extensively on grasses, sedges and herbs in season, and berries, nuts and fish in the post-growing season. The most widely used foods were grasses and sedges, which constituted more than half of the diet.

Long-term studies of Yellowstone grizzly bear food habits have revealed large year-to-year variations in diet as grizzlies exploited foods that were only infrequently available. Examples of specialty foods included ants, pondweed and sweet cicely. The early season diet was dominated by ungulates, both scavenged and as neonate prey, notably elk calves, mid-season by grasses and sedges, and late-season by pine seeds, large mammal carcasses and roots. The annual percentage of energy obtained from the ungulate meat is considerably higher in the GYA than for other interior populations although herbaceous foods remain important because they are more predictable. Grizzly bears at high densities and in some circumstances can impact the ungulate prey base. However, in this area the ungulate prey base is also impacted by other factors such as mountain lions, wolves, hunting, and winter severity. Yellowstone grizzlies have 234 species of 179 genus of vegetative, insect and vertebrate food sources, including the high caloric cyclic crops of army cutworm moths, whitebark pines seeds, and large mammal meat (Gunther et al, 2012).

Yellowstone area grizzlies prefer open grasslands adjacent to cover for most of their feeding activities. While grizzlies depend on fertile grasslands for their predictable supply of forage, seasonally abundant foods are exploited as available. These foods include whitebark pine seeds and carrion.

Whitebark pine seeds are heavily utilized because they are available during the hyperphagic period prior to denning. Many bears feed on pine seeds almost exclusively at that time. Large

amounts of cones are obtained by raiding squirrel caches, which the bears exhume. After good production years, seeds that survive the winter are also used the following spring. Historically, there was a relationship between whitebark pine seed abundance and the number of bears in conflict management situations. During good years, bears move to high-elevation, whitebark pine habitats. But in poor years, grizzlies are found foraging throughout larger areas that may bring them near roads and developed sites more frequently where they encounter unsecured anthropogenic foods. Many whitebark pine stands in the northwest have been infected and killed by whitebark pine blister rust. Whitebark in the GYA has been infected by this disease and by pine beetle infestations during 2003-2009. The Interagency Whitebark Pine Monitoring Program annually surveys and reports the extent of whitebark pine tree loss.

The army cutworm moth is a second, high-fat food source for a segment of the Yellowstone grizzly population during the early hyperphagic period. Moths collect under rocks in alpine areas in late summer and fall. To date, there have been 37 confirmed and 17 possible moth sites observed with grizzly bear feeding activity in the Yellowstone Ecosystem. All of these sites are located in the eastern side of the ecosystem. No moth sites have been documented in Montana's portion of the ecosystem.

During the fall season, bears seek out meat sources associated with big game hunting seasons in the states surrounding YNP.

Anthropogenic foods (i.e. garbage, livestock feed, pet food, bird seed, human foods, garden crops, honey) are opportunistically used by grizzlies wherever humans and bears coexist, and most often in years when important natural foods fail. In the GYA, considerable effort has gone into eliminating the availability of anthropogenic foods and these efforts have been largely successful in reducing incidents of bear-human conflicts. In the past 15 years, there have been increases in county and state ordinances and laws regulating food storage and the feeding of wildlife. There has also been an expansion of food storage rules on USFS public lands to include the entire Gallatin National Forest, Beaverhead National Forest, and on FWP wildlife management areas (WMA). Community efforts have also resulted in a number of local programs to secure garbage sources from bears.

In summary, grizzlies are opportunistic omnivores that are able to take advantage of a wide variety of locally important foods. Home range size seems determined by food abundance and population density dependence. Many individuals are able to abandon, or overlap, their ranges to exploit concentrated food aggregations such as pine seeds, moths, fish, carrion, fruits or garbage. Much of this behavior seems influenced by experience and habit. This adaptability has obvious survival advantages, but also results in large spatial requirements that complicate grizzly management.

Habitat for Denning

Yellowstone grizzlies can spend four to seven months a year in dens. In general, bears den by mid-November, although pregnant females den somewhat earlier. Their emergence from wintering dens occurs from mid-February to late March for males, followed by single females, and lastly by females with new cubs, which can emerge as late as mid-April.

Dens typically are found on steep slopes at high elevation (≥6500 feet) and in all cover types in the GYA. Dens are usually excavated, although natural shelters such as caves and hollow trees are also used. The availability of denning habitat is not thought to be limiting for the GYA bears.

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 that snowmobiles may have on denning bears as snowmobiling does have the potential to disturb bears while in their dens and after emergence in the spring. Because grizzly bears are easily awakened in the den (Schwartz et al. 2003) and have been documented abandoning den sites after seismic disturbance (Reynolds et al., 1986), the potential impact from snowmobiling should be considered. There are no studies in the literature specifically addressing the effects of snowmobile use on any denning bear species and the information that is available is anecdotal in nature (USFWS 2002). Known den locations in areas of snowmobile use are monitored within the GYA when possible to determine if snowmobile activity is having any adverse effect on grizzly bears. At this time, there is no evidence of disturbance (K. Frey, pers. comm.).

Habitat for Security

All current grizzly bear habitat in the continental United States is characterized by extensive timber cover, and most day beds are found in timber. This implies that security cover is an important habitat component, possibly due to social pressure from other large carnivores, human avoidance or summer heat avoidance.

It has long been speculated that female grizzlies with cubs avoid other carnivores such as wolves and adult male bears due to their aggressive and occasionally cannibalistic nature.

In the GYA, the only indication of sexual segregation through habitat use is in years of poor pine seed production where females were found more often near roads and areas used by humans.

The Interagency Grizzly Bear Committee (IGBC) considers the presence of even lightly used roads to cause a loss in useful bear habitat. Roads are incorporated in cumulative effects models (CEM) of habitat quality as the presence of a road tends to increase human activity in an area. Some researchers have concluded that grizzly bears habituate to roads and human presence as required to meet their caloric energy needs. Human presence can lead to grizzly bear moralities, whether due to legal hunting, if allowed, to poaching, or to kills by humans in self-defense situations.

In summary, grizzly habitat requirements are determined by their omnivorous foraging behavior, their need for winter den sites and security cover, and their occasional aggressive social behavior. Large roadless areas are ideal as year round grizzly habitat. However, grizzly bears can and do survive in roaded areas if human tolerance for their presence is high and if a diversity of habitat types is present.

Population Dynamics

Grizzly bears are long-lived animals that range over large geographic areas making it difficult to census and assess population levels. Generally, researchers agree that grizzlies have low

reproductive rates and that grizzly populations are very susceptible to human impacts. Grizzly populations are also very sensitive to changes in female survival rates. Age at first reproduction for females is generally between 4-7 years old and male bears reach sexual maturity around 5 years of age. The average litter size for bears in the Yellowstone area is two cubs (range 1-4) and females typically produce cubs every third year. Breeding occurs in late spring with cubs born in the den the following winter.

As with all other bear populations in the world, it is not possible to determine definitively the actual numbers of bears in the GYA. Therefore, any figure is a result of some form of estimation. Using garbage dump census data collected by the Craighead team, and a census efficiency determined by ratios of collared to uncollared mortalities inside and outside YNP, the pre-dump closure bear population was estimated at 312 animals. The population declined to about 230 bears following the closures but began increasing in the late 1980s. After that time researchers calculated that the grizzly population grew 4-7% per year for an average growth rate of 4.6% per year, up until the late 1990's or early 2000's.

These rates of change are calculated as a function of the number of unduplicated females with cubs of the year (COY). Females with COY are readily visible and uniquely identifiable. However, these counts are influenced by counting effort, seasonal cover, and the total number of animals. A standardized and conservative counting approach has been adopted to avoid duplication of females counted. These records have been maintained by the IGBST since 1973. The female with COY count has been steadily increasing since the late 1980s. The population estimation protocol used until 2007 indicated rates of increase between 4% and 7% from 1983-2001.

New population estimation techniques were adopted in 2007 following considerable analyses (IGBST 2005, 2006). The new technique is still a function of delineating unique females with COY but results in a population *estimate* rather than the earlier conservative *index* of population size. First an estimate for the total number of females with COY present in the population is derived by applying the Chao2 estimator to the sighting frequencies of each unique female with COY (IGBST, 2012.) Then vital rates (for survival and reproduction) are used to estimate the stable age structure and the proportion of females with COY in the population. From these an estimate for the annual population size is produced.

Analysis of the 2002-2011 data during a 2012 IGBST demographic workshop indicates that since 2002, the overall rate of growth of the bear population in the GYA has stabilized or slowed.

The analysis looked at the overall population by zones, revealing that the increase in bear numbers is due primarily to growth and survivorship of bears outside YNP but within the Recovery Zone, as well as bears outside the Recovery Zone. Population growth within YNP had actually slowed or leveled off. The analysis revealed that mean annual adult male bear survivorship rates had increased from 0.87 during 1983-2001 to 0.95 during 2002-2011; thus accounting for more male bears in the population. Adult female bear vital rates remained nearly constant over the same time periods. The population estimate for 2012 was 610 grizzly bears using the 2007 estimation techniques. The new vital rates derived from 2002 to 2011 data, result

in a new estimate of 716 grizzlies for 2012 (IGBST, 2012), primarily because of the increase in male survivorship.

These new data sets and analyses came from the 2012 IGBST workshop to further refine protocols for estimating population size of the GYA grizzlies, evaluate mortality limits and discuss the possibility of zoning the ecosystem for mortality limits given the expanding population (IGBST 2012). Efforts like this will continue to ensure use of the best available science in grizzly bear management and to ensure demographic criteria are met. The USFWS 1993 Recovery Plan established demographic criteria for recovery, including females with COY, mortality limits, and occupancy requirements. Current information on these parameters and their relationship to recovery plan goals are shown in Tables 4 and 5. All of the regional demographic criteria are currently being met for this population.

Table 4. Population estimates and annual evaluations of mortality limits for independent aged (≥ 2 years-old) female and male grizzly bears identified in the Greater Yellowstone Ecosystem during 2007-2012 (See IGBST 2006 and Haroldson and Frey 2008).

				Evaluation of mortality limits									
	Population estimates			Independent females (≥2 years old)					Independent males (≥2 years old)				
Year	Population point estimate	Lower 95% CI	Upper 95% CI	Population segment point estimate	Count of known and probable mortalities	Estimated total mortality (reported plus unreported)	Annual mortality limit	Year result	Population segment point estimate	Count of known and probable mortalities	Estimated total mortality (reported plus unreported)	Annual mortality limit	Year result
2007	571	513	629	240	11	20	22	OK	153	7	13	23	OK
2008	596	535	656	251	14	30	23	Exceeded	159	23	41	24	Exceeded
2009	582	523	641	245	9	20	22	OK	156	11	20	23	OK
2010	602	541	663	253	13	21	23	OK	161	26	47	24	Exceeded
2011	593	533	652	248	16	32	26	Exceeded	157	16	24	24	Exceeded
2012	610	549	672	257	11	15	23	OK	163	18	34	24	Exceeded

Table 5. Bear Management Units in the Greater Yellowstone Ecosystem occupied by females with young (cubs-of-the-year, yearlings, 2-year-olds, or young of unknown age), as determined by verified reports, 2007-2012.

Bear Management Unit	2007	2008	2009	2010	2011	2012	Years occupied
1) Hilgard	X	X	X	X	X	X	6
2) Gallatin	X	X	X	X	X	X	6
3) Hellroaring/Bear		X	X	X	X	X	5
4) Boulder/Slough	X	X	X	X	X	X	6
5) Lamar	X	X	X	X	X	X	6
6) Crandall/Sunlight	X	X	X	X	X	X	6
7) Shoshone	X	X	X	X	X	X	6
8) Pelican/Clear	X	X	X	X	X	X	6
9) Washburn	X	X	X	X		X	6
10) Firehole/Hayden	X	X	X	X	X	X	6
11) Madison	X	X	X	X	X		5
12) Henry's Lake	X	X	X	X	X	X	6
13) Plateau	X	X	X	X		X	5
14) Two Ocean/Lake	X	X	X	X	X	X	6
15) Thorofare	X	X	X	X	X	X	6
16) South Absaroka	X	X	X	X	X	X	6
17) Buffalo/Spread Creek	X	X	X	X	X	X	6
18) Bechler/Teton	X	X	X	X	X		5
Totals	17	18	18	18	16	16	

ALTERNATIVES IDENTIFIED AND CONSIDERED

Alternative I. *FWP's preferred alternative for managing grizzly bears in southern MT is to manage grizzlies in a manner that allows for a sustainable, adequately distributed population that is secure and stable enough to meet the provisions of the GYA CS (2007) and remain out of federal ESA protections. This approach is summarized in the approval of this proposed Grizzly Bear Management Plan for Southwest Montana.*

FWP's current approach of management and that implemented since publication of the 2002 EIS has been sufficient to maintain grizzly populations while also maintaining social tolerance for grizzlies. FWP recognizes the dynamic nature of wildlife populations, ecosystems and human populations and acknowledges the need for equally dynamic and adaptive management strategies that keep the original goals in mind.

FWP's preferred approach maintains proactive programs to minimize and prevent grizzly/human conflict and responsive programs that adequately address conflicts when they do arise. It is critical for the maintenance of social acceptance of bears on the landscape that management of grizzly/human conflicts remains a priority for FWP. It is also critical to monitor bear numbers and habitats to ensure CS criteria are being met and adequate suitable habitat is available.

Alternative II. *A "No Action" alternative is not a viable option as FWP is mandated to manage wildlife and failure to do so by FWP would likely result in the maintenance of a 'threatened' ESA classification for the species within the state. FWP wildlife management works most effectively under approved state plans. Failure to continue active management would contradict the following statute:*

87-5-301 (1b) Grizzly bear conservation is best served under state management and the local, state, tribal, and federal partnerships that fostered recovery; and (c) successful conflict management is key to maintaining public support for conservation of the grizzly bear.
(2) It is the policy of the state to: (a) manage the grizzly bear as a species in need of management to avoid conflicts with humans and livestock.

A 'no action' alternative would be deemed by the USFWS as a lack of adequate regulatory mechanisms to maintain grizzly bears in Montana. A failure to delist grizzlies because of this would remove local management authority ability, the ultimate goal of implementing the ESA and recovering species. ESA listing status removes options for regulated take, results in conservative action to resolve conflict situations, and gives broad authority to those who do not live, work and recreate in Montana.

The cost of a 'no action' alternative could prove burdensome and costly on those who *do* live and work in Montana. Recreation opportunity in grizzly habitat could be more limited under this alternative to ensure the public's safety and the conservative approach to conflict bear removal would likely result in more livestock or property loss. In addition, the 'no action' alternative would more often force FWP to act with more costly, responsive methods, rather than using proactive approaches to conflict management.

Over time it is believed that the 'no action' alternative would erode support for grizzlies in an increasingly larger geographic area limiting the ability of grizzlies to naturally disperse and potentially link to other ecosystems.

ISSUES IDENTIFIED AND CONSIDERED

The 2002 EIS identified and discussed eight critical issues surrounding grizzly bear management in Montana. These issues are still relevant and presented again in this document along with one new issue, climate change. Background information is presented along with FWP's preferred management approach relative to tracking issue impacts or minimizing negative impacts of the issue to humans or bears. Anticipated consequences of preferred management approaches are considered.

This section concludes with a brief discussion of anticipated secondary and cumulative impacts of the preferred management alternatives along with a discussion of irreversible/irretrievable commitments of resources.

Population Monitoring

Preferred methods to monitor grizzly populations:

- Estimate grizzly densities using the best available data from research, distribution changes, DNA samples, and more.
- Cooperatively monitor unduplicated females with cubs within the original PCA and outside.
- Monitor bear mortalities including timing, location and causes and gather survivorship data in cooperation with the IGBST.
- Use verified sightings, DNA samples, photographs and tracks to document changes in bear distribution.
- Conduct research in cooperation with the IGBST to obtain more detailed population information.
- Coordinate monitoring with other states, YNP and the IGBST. Present information collected within the demographic monitoring area as part of annual reporting for Montana population and within annual IGBST reports.
- Use population demographics, in combination with habitat conditions, location and frequency of grizzly/human conflicts, social tolerance, and research findings, to guide population management decisions.

The 18 bear management units (BMU's) established for the original PCA are used to focus intensive management. Additional units have been established outside the original PCA to delineate survey areas for the collection of demographic and occupancy data on grizzly bears by geographic area. Units can be modified when bear activity outside the PCA indicates a change is needed. Units were created and will be created as needed solely for the collection of demographic data and will not of themselves generate any new habitat restrictions.

In order to maintain consistency in data collection and compare grizzly bear population parameters in the BMUs outside of the original 18 units, monitoring protocols have been established. Monitoring of unduplicated females with young is used as an index to assess population trend or abundance over time. The data are currently used to estimate a known minimum and total population size within the demographic monitoring area. The number of

unique female bears is determined each year and using the revised demographic recovery criteria (see IGBST annual reports for methods) an adult female minimum population estimate is calculated from the unique female data. It should be noted that this is still a conservative approach to assessing this population parameter. This minimum adult female population estimate is the base for establishing yearly mortality thresholds of all sex/age groups of bears for all known causes of mortalities. These data, along with new methods that are currently under review, may be used to generate a more accurate total population estimate. The IGBST continually evaluates different statistical approaches and monitoring techniques that allow agencies increased confidence in the estimated total population size for this population of bears. FWP continues to review this information and use it and other data for ongoing management.

The following monitoring techniques are employed in southwestern Montana to track the grizzly bear population:

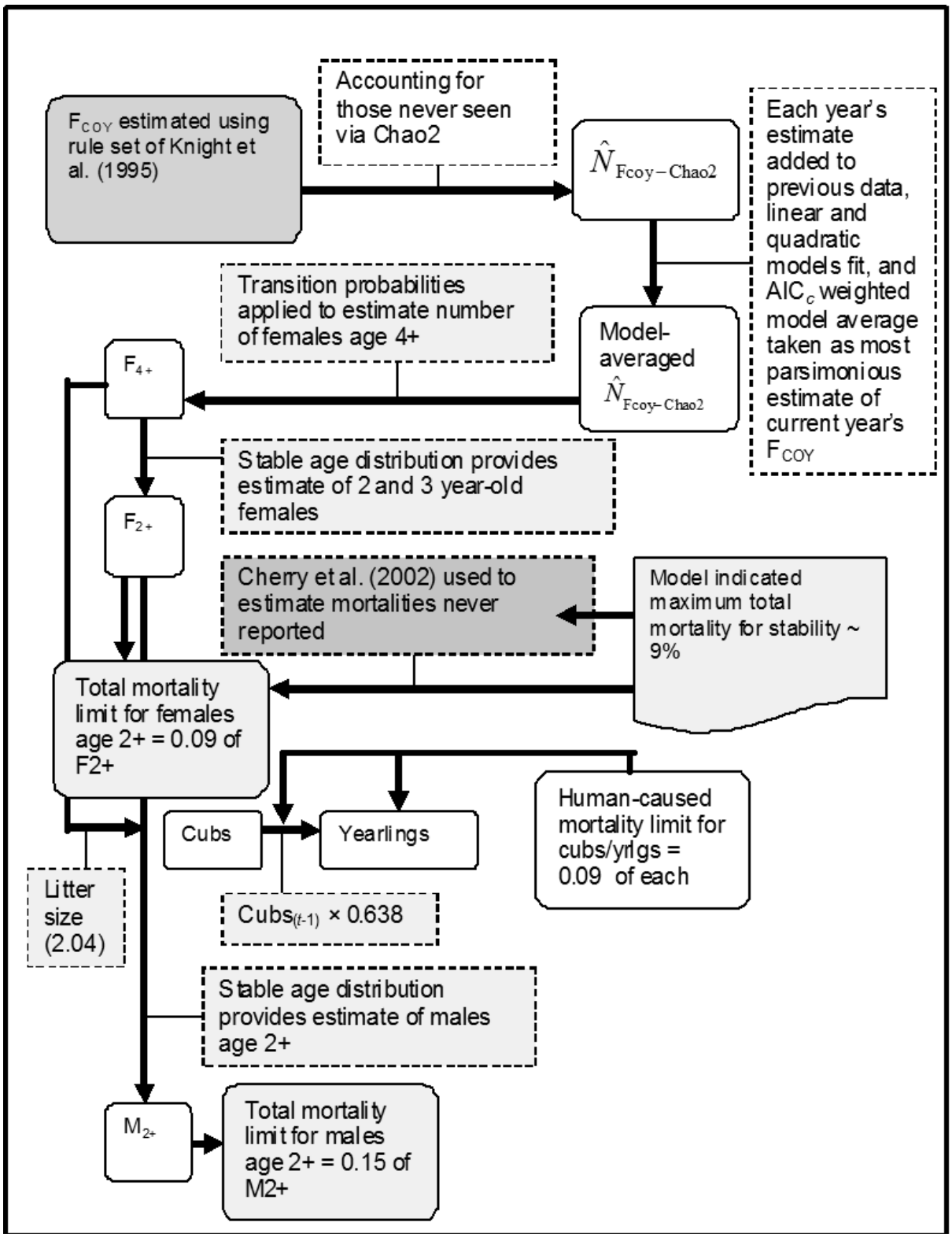
Monitoring of unduplicated females:

Monitoring of unduplicated females with COY will likely always be used as an index to assess population trend or abundance over time. The data are currently used to determine an annual point estimate of the total population size for the GYA (Table 6). Since 2007 the number of unique females with COY are calculated annually and the Chao2 estimator correction is applied along with linear and quadratic regressions of ln(Chao2) to derive the annual total population estimate and mortality limits of each population segment (Figure 4). It should be noted that this is a conservative approach to assessing this population parameter. The IGBST continually investigates different statistical approaches and monitoring techniques that allow agencies to estimate total population size for this population of bears. FWP will continue to review this information and use it and other data in the ongoing management programs.

Table 6. Minimum counts of unique female grizzly bears with cubs of the year (FCOY) identified in the GYA with mean litter size during initial observations of families during 2002-2012. Also provided are effort corrected (Chao2) estimates for FCOY and model averages estimates (using linear and quadratic regressions of 1n(Chao2) with year for 2002-2012; See IGBST 2006, Harris et al. 2007, Haroldson 2008).

Year	Minimum count FCOY	Mean Litter size	Effort Corrected FCOY (Chao2)	Model averaged Chao2
2002	52	2.0	58	43
2003	38	2.0	46	45
2004	49	2.0	58	47
2005	31	1.8	31	48
2006	47	2.0	45	50
2007	50	2.2	53	52
2008	44	1.9	56	53
2009	42	2.1	44	55
2010	51	2.0	56	57
2011	39	1.9	47	56
2012	49	1.9	59	58

Figure 4. Flow chart of the protocols in place since 2007 for estimating the number of grizzly bears in the Greater Yellowstone Ecosystem and assessing sustainable mortality limits.



Management/research trapping and radio collaring:
Management/research trapping and radio collaring provide necessary data on grizzly distribution, movements, home ranges and overall demographics. Data collected with this technique include estimation of seasonal, annual, and lifetime home ranges, identification of important seasonal habitats and foods, potential travel and linkage corridors, extent of occupation, mortality information, and location of denning sites. Distribution of bears can also be informed with other methods such as DNA sampling, observation flights, telemetry flights, nuisance bear activity, and verified sightings.

Estimates of survival:
Survivorship data has been obtained, via aerial and ground telemetry of radio-collared bears and mortality investigations. These data are used to determine average life expectancy by gender and age class, causes of mortality, etc., for bears that inhabit different portions of the ecosystem. All known reported and unreported mortalities (detected via radio-telemetry) are investigated by FWP personnel to determine cause of death. These mortalities are recorded and the information used, along with other mortality data, to manage the population. Survivorship information is fundamental to addressing the potential differences in survivorship of grizzly bears in the original PCA where there are extensive habitat protections, versus bears that live on multiple use areas outside the original PCA.

Non-invasive sampling:
Many researchers in Canada and the United States 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, expensive, and typically have problems identifying the area inhabited by the estimated population. The assumptions of a ‘closed’ population with these techniques creates difficulties in estimating density where ever the technique is used. Kendall et al. (2008) calculated grizzly density for an area in and around Glacier National Park using rub tree hair snares.

Current approach:
FWP recognizes that no one factor can provide the needed information to assess population size and trend. All assessment methods ultimately result in some level of estimation and extrapolation for management purposes. Estimation and extrapolation are used to successfully manage other species of wildlife but for grizzlies in particular FWP also considers the following when making management decisions.

1. Federal laws and regulations that may have major influence on the bear population.
2. Public opinions and perceptions.
3. Results of population and habitat research. Specifically, changes in age structure, reported and unreported mortality trends, population densities, habitat use, and habitat quality are considered.

4. Major changes in human use within management areas.
5. Population status within YNP and Grand Teton National Park as monitored annually through IGBST cooperative efforts.
6. Documentation of grizzly bear range expansions or contractions.
7. Changes in management areas or management unit boundaries.
8. The number of control actions as reported annually. The management program is evaluated annually and adjustments can be made to ensure the population is not being excessively impacted.
9. Grizzly bear management policies in Montana, Wyoming and Idaho as described in the GYA Conservation Strategy.
10. Mortality statistics as collected annually through IGBST cooperative efforts:
    a. Male/female sex ratio and median age.
    b. Total mortality: trends in total number of bear mortalities are annually evaluated in conjunction with population estimates and/or demographics to determine if changes in mortality quotas are needed.
    c. Annual estimates of cub litter sizes as reported throughout the ecosystem.
11. If a hunt was to occur, hunter effort, success, location of hunt, and other metrics would be monitored and considered to aid interpretation of population statistics.

Population data are collected in a manner that provides the most statistically accurate population estimates. Overall population fluctuations are monitored annually through IGSBT cooperative efforts. The most recent analysis indicates that the adult male bear segment of the population is increasing, the adult female bear segment is stable and the sub-adult bear segment is decreasing. (IGBST, 2012). These are indications of a population that is being regulated by density dependence and related food availability.

FWP has considered the collection of population data in a manner that would provide statistically precise population estimates. However, fine scale population fluctuations for a slow reproducing species such as the grizzly bear are difficult and expensive to detect, and more importantly, unnecessary. An overall population trend informed by diverse types of data is adequate to inform FWP's management decisions. The calculation of precise population estimates would be very costly and ultimately provide little additional information to support management decision making.

Trend of grizzly bear mortalities in Southwest Montana

Grizzly bear mortalities have remained nearly constant in Montana since the 2002-2012 EIS was written. There were 40 known documented grizzly bear mortalities (Table 7) during the ten year period prior to 2002. During the eleven year period (2002–2012) since, there have been 45* documented grizzly bear mortalities (Table 8) in Montana's portion of the GYA. Considering the expansion in overall distribution and increase in the overall grizzly bear population since 2001, Montana's management program has been relatively successful in keeping annual grizzly bear mortalities low.

Table 7. Grizzly bear mortalities in southwest Montana, 1992-2001.

CAUSE:	YEAR											% of Total
	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	Total	
Natural	1	0	0	0	0	1	0	1	0	0	3	8
Livestock Depredation	0	0	0	0	0	0	2	0	0	0	2	5
Unknown	0	1	0	0	1	0	0	0	1	0	3	8
Illegal	1	0	2	1	0	2	0	0	0	0	6	15
Self-Defense/Hunting	0	1	1	2	1	2	0	0	2	0	9	22
Roadkill	0	0	0	0	0	0	0	0	0	0	0	0
Unnatural Food	1	0	3	5	4	0	0	0	1	3	17	42
Total	3	2	6	8	6	5	2	1	4	3	40	

Unnatural food related mortalities have decreased from 42% of the total mortalities during the period of 1992–2001, to 29% of the total mortalities during the period of 2002-2012. This decrease is partially attributed to a significant effort to improve sanitation on private and public land. Defense of life and property (DLP) mortalities have risen slightly from 22% to 29% of the total from the first 10 year period to the most recent 11 years.

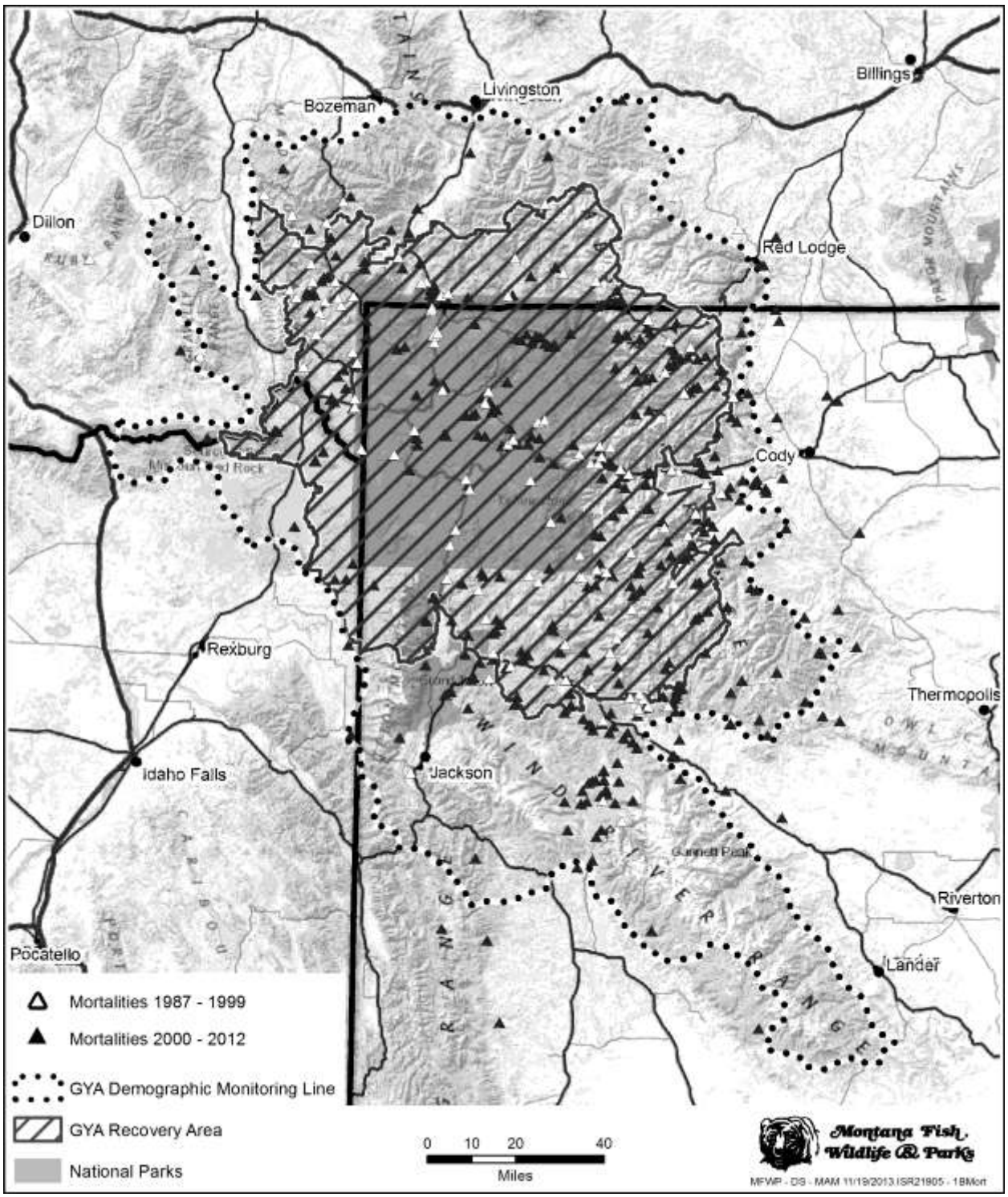
Table 8. Grizzly bear mortalities in southwest Montana, 2002-2012.

CAUSE:	YEAR												% of Total
	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	Total	
Natural	1	0	0	0	0	0	0	0	0	0	0	1	2
Livestock Depredation	0	0	0	0	0	0	0	0	1	2	2	5	12
Unknown	0	0	0	0	2	0	0	1	0	0	0	3	7
Illegal	0	0	0	1	0	0	1	0	1	1	1	5	12
Self-Defense/Hunting	0	1	0	0	0	2	3	2	2	1	1	12	29
Roadkill	0	0	0	1	0	0	1	1	0	0	0	3	7
Unnatural Food	4	0	1	0	1	0	3	0	2	1	0	12	29
Total	5	1	1	2	3	2	8	4	6*	5	4	41*	

* = There are four additional mortalities associated with the 2010 human maulings and one human fatality in the Soda Butte Campground near Cooke City. These four mortalities were not included in the two time period comparisons, due to the reason for removal of the bears. They are noted previously in the documented total mortalities (45) for 2002-2012.

Livestock depredation related mortalities and backcountry DLP mortalities have been slightly increasing in recent years. This should be expected as bear distribution increases, putting people, livestock and bears into more situations of potential conflict (Figure 5). Often there are human injuries associated with the DLP mortalities. Since 2007, 20 people have received minor to severe (1 fatal) injuries from encounters with grizzly bears in Montana's portion of the GYA. A large effort has been made by FWP and the USFS to post information, post news releases and make personal contacts to reduce human (mostly hunters) injuries and bear mortalities. However, due to the random nature of close encounter situations, they are nearly impossible to alleviate or predict.

Figure 5. Distribution of grizzly bear mortalities by two time periods, 1987-1999 and 2000-2012. Mortalities recorded outside of the Demographic Monitoring Area line will not count against sustainable mortality limits (IGBST data).



Habitat/Habitat Monitoring/Human Use of Bear Habitat

Preferred management approaches to provide suitable and adequate habitat:

- Cooperate with other members of the IGBST in a coordinated effort to collect and analyze habitat data.
- Work with land management agencies to monitor habitat changes in a manner consistent with the overall approach to habitat monitoring for other managed species.
- Identify and monitor whitebark pine, moth aggregation sites, and other key foods such as ungulate population levels.
- Continue to use statewide habitat programs to conserve key wildlife habitats in southwestern Montana.
- Recommend that land-management agencies manage for an open-road density of one mile or less per square mile of habitat consistent with FWP's statewide Elk Management Plan guidelines.
- Support the maintenance of existing inventoried roadless areas and work with local groups and land managers to identify areas where roads could be reclaimed.
- Work with the Department of Transportation (DOT) to address wildlife crossing needs on their projects.
- Monitor coal bed methane activities, and other oil and gas projects, and address grizzly bear needs in permitting processes as necessary and when appropriate.
- Monitor mining activities, timber harvest and public lands livestock grazing and address grizzly bear needs in permitting processes as necessary and when appropriate.
- Continue to work with local communities, counties, and developers to limit negative impacts of new development on grizzly bears.
- Work with local community groups to identify and promote habitat characteristics that benefit bears.
- Review all new trail proposals or adjustments to trails on FWP lands through the MEPA process. Negative impacts to grizzly bears will be avoided while designing new trails or trail use restrictions.
- Review and comment on federal trail projects when appropriate.
- Evaluate winter use programs to ensure they avoid impacting grizzly bears during denning periods, including den entrance and emergence when appropriate.
- Consider grant applications for the state trails program only after MEPA or NEPA process has been completed to include consideration of grizzly bear habitat needs as appropriate (this will be managed by Montana State Parks, a division of FWP).
- Increase resource stewardship within grizzly bear habitat through recreationists education and regulations compliance.
- Monitor changes to habitat or bear behavior suspected to be climate change related and mitigate when possible. For example, education campaigns could be implemented to warn hunters that later denning dates due to warmer autumns mean bears are active later than in the past.

FWP views fish and wildlife habitat on public land, as valuable property that preferably remains open to hunters, anglers, and other public users. Accessibility to public lands will be balanced with the year-round requirements of fish and wildlife, while maintaining a functioning road system. By implementing this program, FWP can maintain grizzly bears while still providing for other appropriate uses.

Reasons for the decline of grizzly bears in North America are excessive human-caused mortality and habitat loss. Habitat loss can result from conversion of native vegetation to agriculture, disturbance, displacement from human developments and activities (roads, mines, subdivisions), and fragmentation of habitat into blocks that are inadequate to maintain viable populations and connectivity.

This management plan recommends a coordinated approach to the monitoring of major grizzly bear food sources and to addressing land management issues related to grizzly bear habitat protection, disturbance, and mitigation. It is important to note that these efforts benefit many species in addition to bears.

Grizzly Bear Foods

Because grizzly bears are omnivorous and opportunistic they are able to survive in a variety of habitats and utilize a variety of foods. As grizzly bear expansion and population increase has occurred, food and habitat monitoring has occurred in an increasingly larger area. Three major food sources used by bears inhabiting the GYA are whitebark pine seeds, army cutworm moths (*Euxoa auxiliaris*) at insect aggregation site, and ungulates, including use of winter kill (primarily elk and bison), predation (mostly on neonates), and usurping wolf killed ungulate carcasses. These major foods are important and can either be monitored directly, or bear use of the resource can be monitored such as bear use of army cutworm moths aggregation sites. Although these are the major food sources in the GYA, grizzly bears are known to consume at least 234 species within 179 genera from 4 kingdoms. Of all foods consumed, 75 species were frequently used by bears and 153 species were used opportunistically (Gunther et al., 2012).

FWP works directly with the IGBST to monitor the major grizzly bear foods as part of ecosystem wide monitoring. Whitebark pine stands are monitored for seed production, tree health (evidence of blister rust, *Cornartium ribicola*), infestations of mountain pine beetle (*Dendroctonus ponderosea*) and evidence of bear use. Identified moth aggregation sites are monitored for use by bears, although no sites with documented grizzly bear use are currently known to occur within the Montana portion of the GYA. Ungulate populations are monitored during routine FWP big game population and trend surveys. The IGBST reports on the condition of food sources within the GYA each year in the annual report. Monitoring intensity can be increased if concerns arise about any food source due to a changing environment or decline in grizzly population numbers. FWP will implement more specific monitoring protocols as needed in coordination with the IGBST and land management agencies.

Habitat Availability and Security

Grizzly bear habitat can be impacted by a reduction of security cover as the direct or indirect result of recreational development, road use, road restrictions, motorized trails, human presence, oil and gas development, logging, forest fires and other natural events. FWP recognizes the need to minimize negative impacts from these factors whenever feasible. FWP considers impacts to grizzlies on FWP managed properties such as Wildlife Management Areas or State Parks and designs grazing, logging, and farming plans for these areas with grizzly use in mind. While FWP is not the decision maker on federal or State School Trust lands, FWP works closely with these land management agencies to minimize negative impacts on all fish and wildlife.

The intermountain valleys between major mountain ranges of southwestern 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. As agricultural land, they also provide a wide range of opportunities for wildlife to live and travel between mountain ranges.

While FWP has no jurisdiction over private land uses, it does have strong private land habitat initiatives. Most are funded through earmarked accounts including Montana's Migratory Bird Stamp (dollars directed toward wetland riparian areas), Upland Game Bird Habitat Enhancement Program (dollars go primarily towards enhancing shrub/grassland communities) and Habitat Montana. Habitat Montana specifically allows FWP to conserve habitat on private lands via lease, conservation easement or fee title acquisition. This program is not directed towards specific species but rather towards conserving Montana's most threatened habitats, i.e. wetlands/riparian areas, shrub/grasslands, and intermountain foothills. Since 2002 Habitat Montana funds have been used within the GYA to purchase lands adjacent to the Dome Mountain WMA to offer greater use of the area by wildlife, including grizzlies.

Efforts to conserve habitat in Montana will continue to be a FWP priority. FWP completed 'Recommendations for Subdivision Development: A Working Document' in 2012 (MFWP, 2012). This document is intended to guide FWP biologists in responding to developer and local government request for comment on subdivision applications. It also provides local planners, local government officials, developers and development project teams with planning tools, approaches, and design recommendations.

Roads, Trails, and Developed Site Management

Radio telemetry studies have identified roads as significant factors in habitat deterioration and increased mortality of grizzly bears. Excessive clearing widths, increased speeds, increased traffic volume, and widened roads are known to cause increased road mortality and/or reduce habitat connectivity (Proctor 2003, Clevenger et al. 2002). The distance at which bears appear to be displaced by roads varies in different areas and seasons, but generally, bears living near roads have higher probability of human-caused mortality as a consequence of illegal shooting, control actions resultant from attraction to unnatural food sources, or by being mistakenly identified as a black bear by hunters. As major highways bisect most of the intermountain valleys, FWP works with the Montana DOT and land management agencies on mitigating barriers to wildlife crossing roads and maintaining secure habitat for grizzlies in addition to other species.

Many examples of collaborative approaches to safe road crossings exist along US Highway 93 in western Montana and monitoring by the Montana DOT has shown an increase in grizzly bear use of underpass structures since construction (P. Basting, pers comm.). Long-term monitoring will provide useful information to southwestern Montana biologists and transportation planners when opportunities arise to construct underpasses with the hopes of aiding wildlife movement. Some specific multi-species work has been completed or is underway already to include highway fencing projects and road kill surveys along Bozeman Pass and in the Madison Valley. These projects have involved cooperative efforts of DOT, FWP, and the Craighead Institute (www.mdt.mt.gov). FWP will continue to engage in exploratory studies to identify areas of conflict and work to develop mitigations to reduce grizzly bear highway mortalities.

The 2002 EIS stated that FWP would pursue an MOU or other agreement with DOT to provide guidelines that would enhance the ability of bears and other wildlife to cross roads. In the 10 years since publication of that document, FWP and the DOT have worked closely to seek ways to minimize wildlife mortalities on highways. This partnership will continue as FWP reviews DOT proposals and offers guidance on habitat use and movement patterns of animals. The increased tracking of grizzlies has allowed FWP to share real movement data with DOT that they can use to improve their highway designs.

FWP supports the maintenance of road densities of one mile or less per square mile of habitat as the preferred approach. This is the goal of the FWP statewide elk plan and it seeks to meet the needs of a variety of wildlife while maintaining reasonable public access. Within the 2007 GYA Conservation Strategy, all roads fall under the rule set for motorized access routes. Additional restrictions could be designed as needed through coordinated decision making by FWP, land management agencies, transportation planners and local input.

Restricted roads and motorized trails are important factors in evaluating habitat potential for and mortality risk to grizzly bears (Mace et al. 1996). Grizzly bear researchers and managers generally agree that secure habitat, defined as those areas more than 500 meters from a motorized access route during the non-denning period, are especially important to the survival and reproductive success of grizzly bear, especially adult females (IGBC 1998).

Since publication of the first EIS (2002) major changes to trail management have been implemented with the importance of secure habitat for grizzlies in mind. The biggest change was the prohibition of motorized, wheeled cross-country travel on National Forest lands. 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. 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 single-track roads or trails. Cross-country travel will continue to be allowed for military needs, fire suppression, search and rescue, or emergency response. Forest users can also drive cross-country to campsites within 300 feet (90 m) of most existing roads or trails, after locating their campsite in a non-motorized fashion.

All motorized trails fall under the rule set for Motorized Access Routes Database in the 2007 CS. Non-motorized trails are not counted against area calculations of secure habitat but fall under the rules set for secure habitat. This rule set ensures the percent of secure habitat within each bear management subunit within the PCA is maintained at or above levels that existed in 1998. Temporary and permanent changes are allowed under specific conditions identified in the CS (2007). Permanent changes in secure habitat are only allowed if any loss of secure habitat is replaced by secure habitat of equal amount and equivalent quality within the same BMU.

Within the 2007 CS a trailhead is considered a developed site and as such falls under the developed site standards. Developed sites are known to displace grizzly bears and this has some direct effect on habitat effectiveness. The primary concern related to developed sites is mortality connected to food conditioning and bear habituation. Impacts to bears as a result of new or expanding developed sites could result from increases in human capacity at the site, temporary or

permanent loss of habitat, increased length of time of use, increased access to surrounding areas or backcountry trails, and increases in unsecured attractants. Within the PCA, the number of sites will remain at or below the 1998 levels with some exception (CS 2007).

Other developed sites include, but are not limited to, campgrounds, lodges, administrative sites, and permitted resource development sites such as oil and gas exploratory well or production wells within the PCA to include on FWP lands. These developed sites are capped at 1998 levels.

National forests will continue to identify areas where more detailed local travel plans should be developed. FWP staff will continue to comment on changes to federal trails policy while continuing to evaluate state policies. Montana State Parks currently administers three trail grant programs: the federally funded Recreational Trails Program, the state funded Off-Highway Vehicle Program and the Snowmobile Grant Programs. Regardless of whether an FWP funded trails project is on federal, state, or private lands, it must comply with the Montana Environmental Policy Act (MEPA). On federal lands, trail projects must also comply with USFS Travel Plans, BLM Unit Plans, and the National Environmental Policy Act (NEPA). The FWP trails grant program requires documentation of NEPA or MEPA compliance as part of any grant application. In this way FWP has assurances that wildlife have been considered in project planning and public input has been a part of the process. More information on the Montana trails program can be found in the Montana State Trails Plan (Montana FWP, 2011).

It is FWP's opinion that expanding the current level of habitat restriction and programs to bear-occupied areas outside the PCA would not generate social acceptance for the bear nor is expansion of habitat restrictions necessary for population recovery. Incorporating the grizzly as another component of FWP's 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. FWP recognizes that habitat changes in the PCA (e.g., loss of whitebark pine) could result in increased importance of habitats outside the PCA and will respond to those changes if they occur.

General Guidelines for Habitat Management

The following guidelines are 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 each project 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 which is ecologically similar and includes all of the year-long habitat requirements for a sub-population of one or more selected wildlife species.
2. Evaluate activities or combinations of activities, on seasonally important wildlife habitats that may result in an adverse impact on the species or reduce 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, road management requirements, and more.
4. Use minimum road- and site-construction specifications based on projected transportation needs. Schedule 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. Close or reclaim roads that are not compatible with area management objectives, and are no longer needed for the purpose for which they were built. 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 of off-road vehicles.
8. Direct efforts towards improving the quality of habitat in site specific areas of habitually high human-caused bear mortality. Increase or implement sanitation measures, seasonal road closures, trail closures, etc., as appropriate.
9. Evaluate impacts of road, trail, and development projects through the NEPA and MEPA processes.

Climate Change

Climate change may result in a number of changes to grizzly bear habitat in the foreseeable future, including a reduction in snowpack levels, shifts in denning times, shifts in the abundance and distribution of some natural food sources, and changes in fire regimes. Yet, most grizzly bear biologists in the U.S. and Canada do not expect habitat changes predicted under climate change scenarios to directly threaten grizzly bears (Servheen and Cross 2010). These changes may even make habitat more suitable and food sources more abundant. However, these ecological changes may also affect the timing and frequency of grizzly/human interactions and conflicts (Servheen and Cross 2010).

The western U.S. is predicted to experience milder, wetter winters with warmer, drier summers and an overall decrease in snowpack (Leung et al. 2004). While some climate models do not demonstrate significant changes in total annual precipitation for the western U.S. (Duffy et al. 2006), an increase in "rain on snow" events is predicted by others (Leung et al. 2004; McWethy et al. 2010). The amount of snowpack and the timing of snowmelt may also change, with an earlier peak stream flow each spring (Cayan et al. 2001; Leung et al. 2004; Stewart et al. 2004). Although there is some disagreement about changes in the water content of snow under varying climate scenarios (Duffy et al. 2006), reduced runoff from decreased snowpack could translate into decreased soil moisture in the summer (Leung et al. 2004). However, Pederson et al. (2011) found that increased spring precipitation in the northern Rocky Mountains is buffering total annual stream flow thus far from these expected declines in snowpack.

The timing of den entry and emergence is at least partially influenced by food availability and weather (Craighead and Craighead 1972; Van Daele et al. 1990). Less snowpack would likely shorten the denning season as foods remain available later in the fall and become available earlier in the spring. In the GYA, Haroldson et al. (2002) reported later den entry times for male grizzlies corresponding with increasing November temperatures from 1975 to 1999. This

increased time outside of the den could increase the potential for conflicts with humans (Servheen and Cross 2010).

Climate change could create temporal and spatial shifts in grizzly bear food sources (Rodriguez et al. 2007). Changes in plant community distributions have already been documented, with species' ranges shifting further north and higher in elevation due to environmental constraints (Walther et al. 2002; Walther 2003; Walther et al. 2005), outbreaks of insects, or disease (Bentz et al. 2010). Decreased snowpack could lead to fewer avalanches thereby reducing avalanche chutes, an important habitat component to grizzlies, across the landscape. On the other hand, increases in "rain on snow" events may decrease the stability of snowpack resulting in increases in avalanches. Changes in vegetative food distributions also may influence other mammal distributions, including potential prey species like ungulates. While the extent and rate to which individual plant species may be impacted is difficult to foresee with any level of confidence (Walther et al. 2002; Fagre et al. 2003), there is general consensus that grizzly bears are flexible enough in their dietary needs that they will not be impacted directly by ecological constraints such as shifts in food distributions and abundance (Servheen and Cross 2010).

Fire regimes can impact the abundance and distribution of some vegetative bear foods (e.g., grasses, berry producing shrubs). Fire frequency and severity may increase with late summer droughts predicted under climate change scenarios (Nitschke and Innes 2008; McWethy et al. 2010). Grizzly bears in the lower 48 States evolved with frequent fires but effective fire suppression policies over most of the 20th century negatively affected grizzly bear foods by reducing early successional stages (LeFranc et al. 1987). Increased fire frequency actually has the potential to improve grizzly bear habitat, but these fires must be low or moderate in severity to be advantageous. High intensity fires may reduce grizzly bear habitat quality in the short term by decreasing hiding cover and delaying regrowth of vegetation. However, even wide-spread, high intensity fires like the 1988 wildfires in Yellowstone may not have detectable impacts to grizzly bear foraging strategies (Blanchard and Mattson 1990). Federal and state agencies are currently under direction to reduce wildfire management costs, including restoring natural fire regimes to reduce the risk of high intensity wildfires. Overall, we do not anticipate altered fire regimes will have significant negative impacts on grizzly bear survival and reproduction.

The best way to mitigate potential negative impacts from climate change is through well-connected populations of grizzly bears. Connectivity among grizzly populations also mitigates genetic erosion and increases resiliency to demographic and environmental variation.

Future Distribution

Preferred management approaches to manage future grizzly distribution:

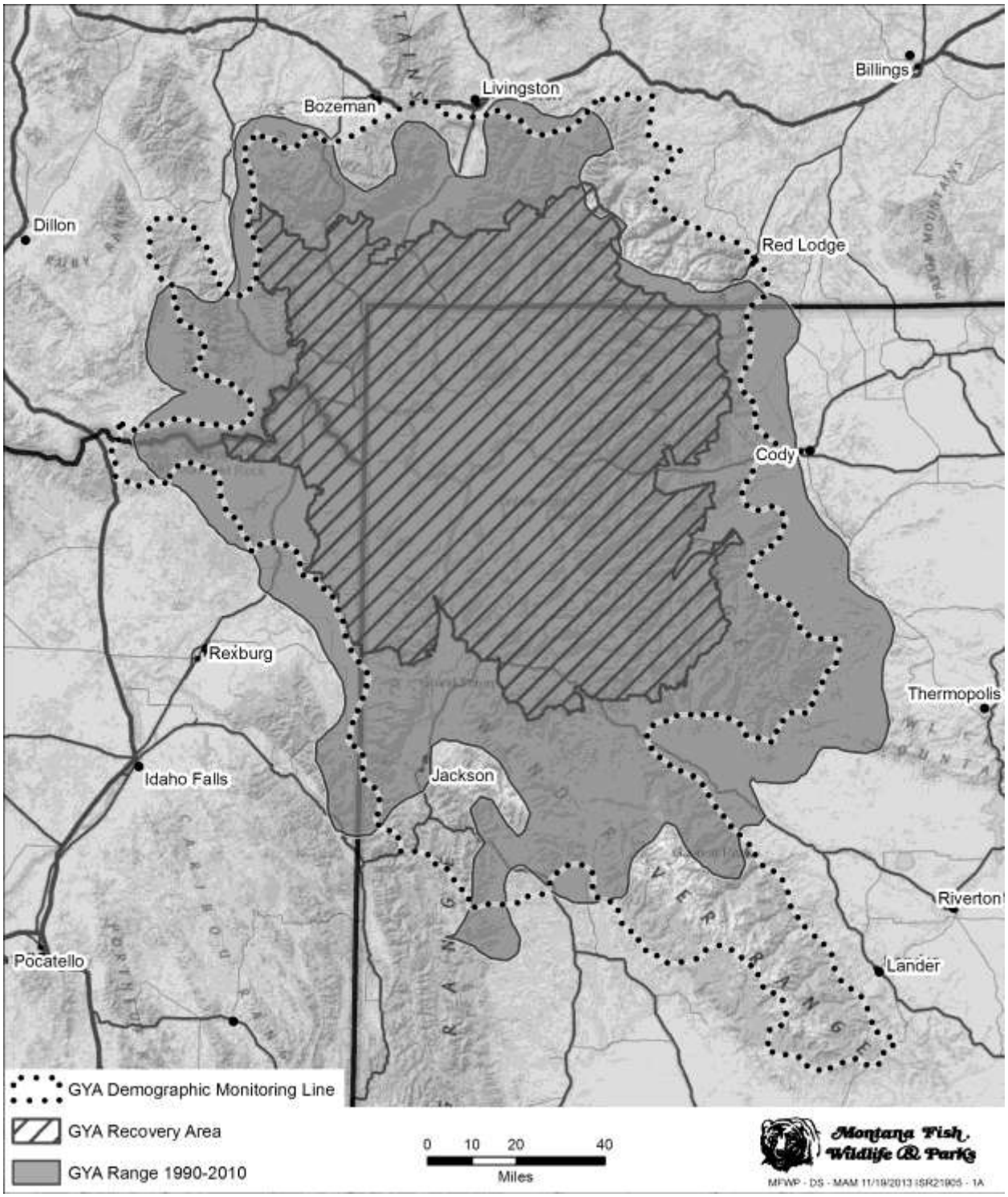
- Continue to monitor grizzly bear expansion from historically occupied areas along with changes in population numbers.
- Continue to address grizzly/human conflicts in areas outside the core recovery area in a manner that considers overall grizzly conservation as well as human safety and social tolerance.
- Continue to work with Idaho, Wyoming, and the Interagency Grizzly Bear Committee to address the issue of linkage between grizzly recovery areas and follow the goal set forth in the IGBC work plan to promote linkage between the GYA and the NCDE grizzly populations.

- Implement habitat programs that provide for wildlife needs to include working with the DOT to address issues of wildlife movement across roads (especially Interstates 90 and 15; and Highways 287, 191, 89, and 20).

FWP will work with landowners and private interests to promote programs that provide for wildlife access to private lands. The IGBST documented an increase of the GYA grizzly bear population, growing from approximately 200-350 bears in the mid-1980s (Eberhardt and Knight 1996) to at least 600 in 2012. Results from a 2011 IGBST Workshop (IGBST, 2012) however indicate the GYA grizzly bear population trajectory has changed and the population growth rate for the recent period is now stable to slightly increasing. This corroborates results indicated by previous regression analyses, and is in contrast to estimated growth rates of 4-7% per year during the decades of the 1980s and 1990s (Schwartz et al. 2006). These changes in population growth are hypothesized to be attributed to 1) density-dependent effects, 2) declines in key food resource such as whitebark pine seeds, or 3) a combination of density-dependent effects and resource decline (IGBST, 2012).

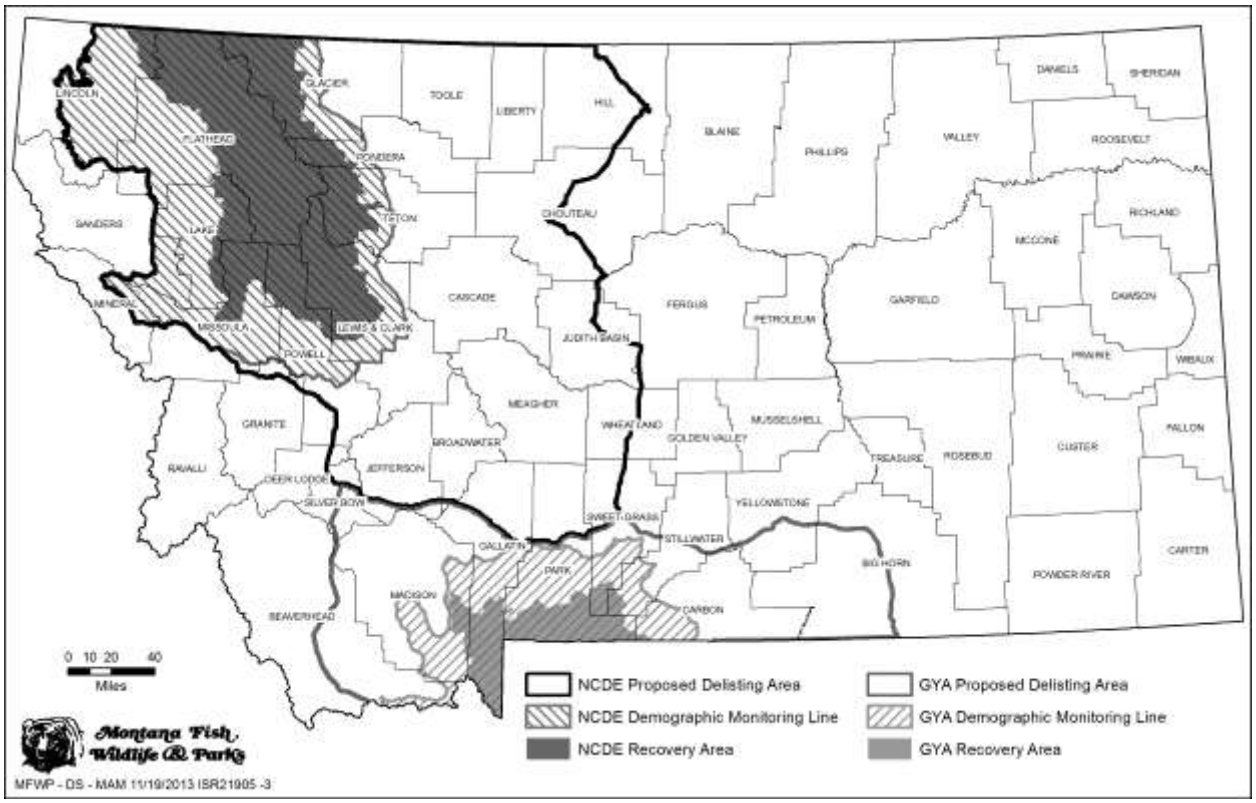
FWP suspects grizzly bears within or close to the original Recovery Zone in Montana's portion of the GYA are experiencing this same leveling of population growth. Moreover, FWP continues to find bears well outside the original Recovery Zone in areas previously unoccupied since initiation of recovery. In the grizzly bear recovery plan, the Recovery Zone is defined as the area "within which the population and habitat criteria for achievement of recovery will be measured" (U.S. Fish and Wildlife Service 1993:17). Whereas this may be true, maintenance of an increased bear population in numbers and distribution outside the Recovery Zone helps ensure long-term viability of this population. There is valuable habitat outside the Recovery Zone on public land and grizzly bears currently occur in many of these areas (Figure 6).

Figure 6. Distribution of grizzlies from 1990-2010 showing a large area of grizzly bear occupancy (gray shaded polygon) outside the original Recovery Zone (IGBST data).



Management of non-conflict grizzly bears in areas between the NCDE management area and the DMA of the GYA (Figure 7) will be compatible with maintaining some grizzly occupancy. Maintaining presence of non-conflict grizzly bears in areas between the NCDE management area and the demographic monitoring area of the GYA, such as the Tobacco Root and Highland Mountains, would likely facilitate periodic grizzly movements between the NCDE and GYA. Conflict management and removal of problem grizzly bears will remain a priority within these areas like the rest of Montana. Human safety will always be prioritized over facilitation of grizzly movement for genetic connection between the ecosystems.

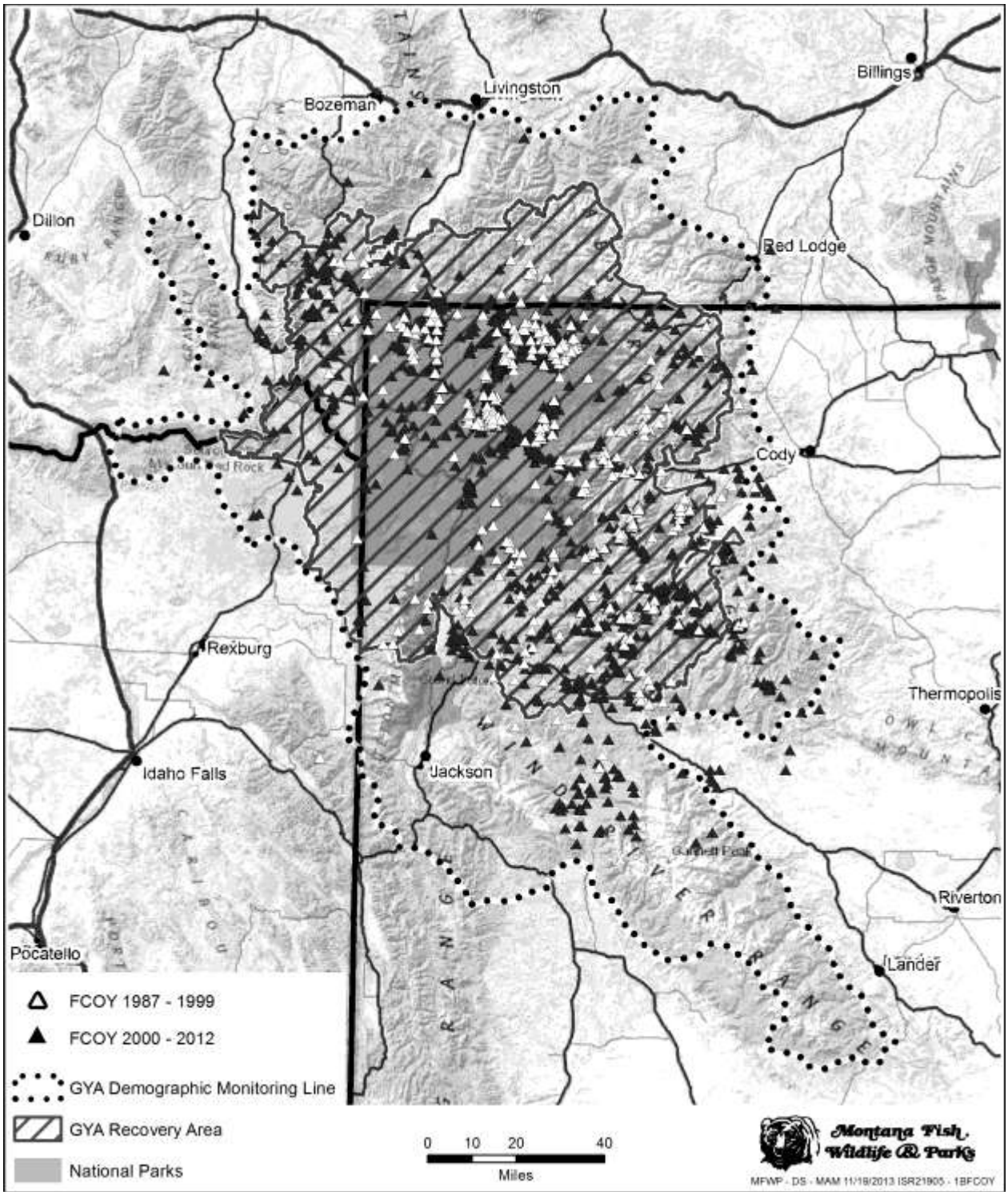
Figure 7. Southwest Montana showing proximity of the GYA Demographic Monitoring Area to the NCDE Demographic Monitoring Area. The demographic monitoring areas within each ecosystem represent the areas where grizzly population demographics, i.e. population size, trend, and mortalities, will be monitored. The delisting lines shown for both ecosystems represent the proposed boundaries the US Fish and Wildlife Service would use to delist grizzly bears within each ecosystem.



Grizzly bear distribution in southwest Montana has dramatically changed over time (Figure 8). A comparison of the current distribution to previously published distribution maps shows an approximate increase in occupied habitat of 36% between 2002 and 2012 (Bjornlie et al., 2013). This is compared to the increase in distribution of 34% from 1980 to 1990. It should be noted that the boundaries used for these calculations are approximations. Additional supportive evidence is considered when making judgments about occupied habitat near the edge. Management decisions always take into account the habitat suitability and social tolerance in any area where a grizzly may appear. Bears found far outside of the original recovery area often receive less consideration for capture and relocation after killing livestock, becoming habituated to humans or becoming food habituated. At the same time, a grizzly found far outside the original recovery area is left alone by managers when exhibiting natural, socially acceptable behaviors.

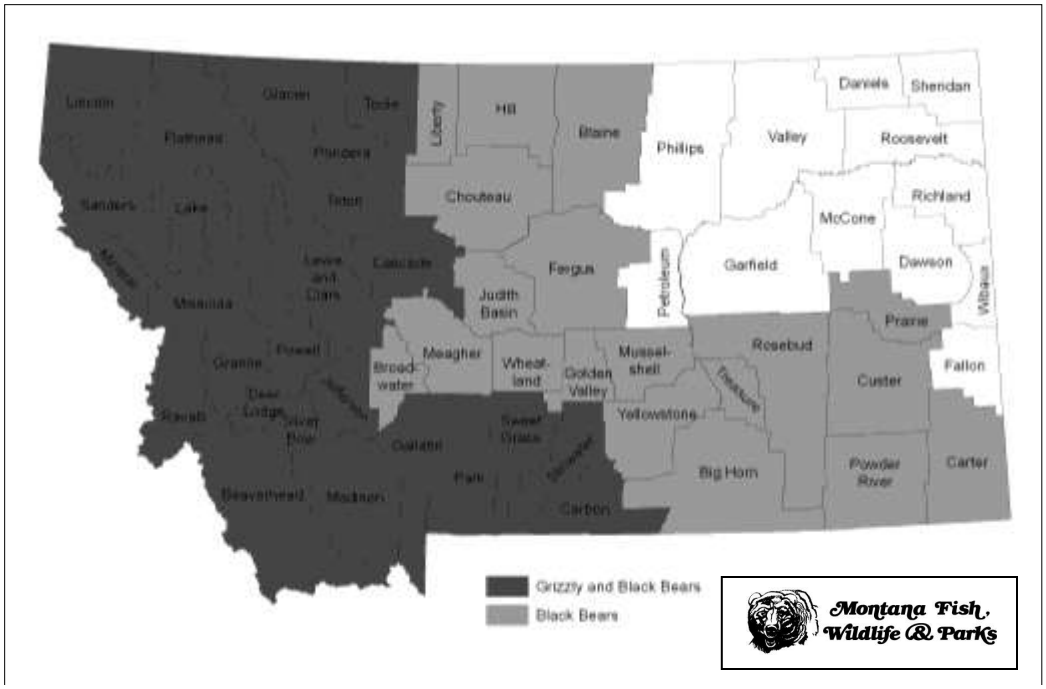
Based on current programs, both within and outside of the recovery area, it is expected that expansion will continue. It is FWP's intent to implement this management plan in a way that allows future expansion consistent with the approach used for most other species that FWP manages.

Figure 8. Distribution of females with cubs of the year by two time periods, 1987-1999 and 2000-2012, showing the increase in distribution of grizzlies over time. Black triangles on the edges of the Recovery Zone represent the increase in distribution of grizzly bears within the past decade (IGBST data).



Finally, there has been and continues to be debate on the potential for linking the different grizzly bear populations in Montana. 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 today there is the possibility of encountering a grizzly bear (Figure 9).

Figure 9. Map to be used in the 2014 black bear regulations indicating where hunters may encounter black bears *and* grizzly bears (dark gray shading) versus areas where hunters will likely encounter only black bears (light gray shading).



There have been a number of papers and models developed on this linkage concept and the impacts of fragmentation and rural development on grizzly bear connectivity. In 2004, the IGBC Public Lands Wildlife Linkage Taskforce presented findings of the 2003 Linkage report (Servheen, 2003) to the IGBC. The report was intended to be used as a tool by public land managers for developing and revising land and resource management plans. By using this tool, land managers can ensure that their plans will maintain wildlife linkage so far as public lands are concerned. The report specifically presented the results of wildlife linkage assessments in three high priority areas in northern Idaho and western Montana. Some of these results would be generally applicable to the GYA.

The 5- year work plan of the IGBC includes the following vision: Identify and achieve biologically effective linkage between all the large blocks of important habitat within and among the grizzly recovery areas. Maintain and enhance linkage with Canadian populations and between Canadian populations adjacent to the US/Canada border. Implement linkage as a transboundary interagency response mechanism to climate change in addition to the genetic and demographic benefits. IGBC partners will seek to enhance the habitat security of public lands in key landscape-scale linkage through: 1) appropriate motorized access management; 2) maintenance of visual cover; 3) limitations on new site developments such as campgrounds; 4) avoidance of road paving on public lands; 5) no increases in motorized access route density in linkage areas; and 6) sanitation enhancement. IGBC will also work to expand cooperative approaches that produce secure movement areas for grizzly bears and other wildlife through easement opportunities and acquisition where possible. Finally, IBGC partners will work closely with transportation departments to assist in identifying areas where wildlife would benefit through application of crossing structure placement or enhancement of existing structures in combination with appropriate fencing to direct wildlife to these locations. Specific subcommittee goals for the GYA and the NCDE include: 1) Promote assessment of linkage opportunities on public lands in land management planning, 2) Promote outreach with private land owners, local governments, and land conservation groups to enhance awareness and opportunities for providing linkage, and 3) Promote cooperative efforts with transportation agencies to enhance linkage across transportation corridors.

In 2008, FWP initiated a project to identify crucial wildlife areas and corridors. The intent of this effort was to provide information to developers and planners on the most critical habitats for wildlife to allow them to make smarter development choices with wildlife in mind. Results of this effort include a web based mapping program, i.e., Crucial Areas Planning System 'CAPS', that identifies crucial habitats for use in project planning and web based maps depicting connectivity layers for different species. FWP also developed a set of recommendations for subdivision development in 2012 intended to help local planners, local government officials and developers make informed decisions related to wildlife. The recommendations are currently being used by FWP biologists when providing comments on new subdivisions. These efforts by FWP are intended to limit the impacts of development on grizzlies in their current habitats while also considering the potential impacts of development to grizzlies in areas that they may someday occupy.

Schwartz et al. (2012) found that even extremely low densities of residential development created sink habitats and suggest that conserving grizzly bear source habitat will likely require a

landscape-scale approach. Securing important linkage habitats through purchase or easement offers significant protection for linkage areas and implementation of 'bear smart' community programs can reduce the impacts of development on grizzlies and other wildlife. Proctor et al. (2012) similarly suggest that regional inter-jurisdictional efforts to manage broad landscapes that allow grizzly movement are necessary to maintain healthy populations. Genetic linkage is the movement of genetic material as males move between ecosystems and breed successfully. Populations eventually connect demographically with continuous low densities of female occupancy between them.

As documented from sightings, captures, and mortalities in the past decade, grizzly bears from the GYA and the NCDE are expanding their distribution and there is considerable potential for these populations to connect. It is a long-term goal of FWP to allow the grizzly bear populations in southwest and western Montana to reconnect through the maintenance of non-conflict grizzly bears in areas between the ecosystems. FWP anticipates that successful implementation of this plan, along with adequate local involvement, can allow this to occur. FWP will continue to address land-use patterns that promote or hinder bear movement.

Management of non-conflict grizzly bears in areas between the NCDE management area and the DMA of the GYA (Figure 7) will be compatible with maintaining some grizzly occupancy. Maintaining presence of non-conflict grizzly bears in areas between the NCDE management area and the demographic monitoring area of the GYA, such as the Tobacco Root and Highland Mountains, would likely facilitate periodic grizzly movements between the NCDE and GYA. Conflict management and removal of problem grizzly bears will remain a priority within these areas like the rest of Montana. Human safety will always be prioritized over facilitation of grizzly movement for genetic connection between the ecosystems.

FWP did not consider an alternative to limit grizzly bear distribution to just the recovery area. In FWP's opinion, this approach is logistically impossible and biologically undesirable. In order to maintain resiliency in the population bears need to be allowed to occupy a broader landscape. Also, bears cannot be confined to the Recovery Zone because there are no barriers to contain them, and it is impossible to know the location of every animal all the time. As previously stated in this document, grizzly bear issues or conflicts occurring in new habitat areas will be addressed under current program methods.

Human Safety

Preferred management approaches to manage grizzlies in the interest of human safety:

- Lethally remove bears displaying predatory behavior that kill/injure/attack people.
- Consider lethal removal for bears that kill/injure/attack people in a surprise encounter situation on a case by case basis.
- Consider lethal removal for bears displaying bold, aggressive behavior resulting in a threat to human safety on a case by case basis.
- Consider preemptively relocating a grizzly bear to avoid conflicts when there is a demonstrated threat to human safety.

- Focus efforts on programs to educate people about safety measures to prevent conflicts with grizzlies. FWP will provide annual information in poor natural food years alerting the public of the increased potential for conflicts.
- Continue to provide information on safety in bear country in the big game hunting regulations, during hunter education courses, through mailings to license holders, and on trailhead informational signs.
- Continue to be actively involved with expansion and enforcement of food-storage ordinances including food storage orders on FWP Wildlife Management Areas.
- Continue to work with city and county governments on requirements of bear-resistant garbage containers for homeowners in bear country. (More information about nuisance bear management and education/outreach efforts are included in later sections.)

Grizzly bears are large, powerful animals and, on rare occasions, can threaten human safety and human lives. FWP grizzly bear management programs work to minimize threats to human safety, however, threats to human safety cannot be totally eliminated. Unfortunately, serious encounters between grizzly bears and people occur, sometimes resulting in human injuries/death and bear mortalities. Actively responding to these situations and determining causes for the situation are crucial steps to a successful management program and for meeting the needs of the public and bears. Grizzly bears in the GYA are expanding into new habitats outside the historical suitable habitat line. As many of these habitats are already occupied by people living, working, and recreating it is expected that the number of grizzly/human conflicts will increase.

Under Montana Statute 87-6-106 , a citizen may legally kill a grizzly bear while acting in self-defense if the bear "…is attacking, killing, or threatening to kill a person…" In Montana during the period 1992-2002 and 2003-2012, respectively 9 and 12 grizzly bears were killed by individuals acting in self-defense. With the potential for increasing grizzly/human encounters, safety for both humans and bears is a critical issue.

One of the goals of this management plan is to create an environment that minimizes the potential for grizzly/human 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 expanding. It is possible that certain types of human use may require modification to protect people, protect bears, reduce conflicts, and/or manage habitat. This is the same program FWP uses for other large carnivore species such as mountain lions or black bears.

Although there are a variety of situations that can result in a grizzly/human conflict, the primary categories are: 1) Food related -- improper food storage or sanitation in either a backcountry (e.g., hunter camp, hiker or other recreationist), rural (e.g., farm/ranch, cabin, church camp) or urban/suburban setting (e.g., subdivision, town); 2) Surprise encounters -- females defending cubs, bears defending a kill/carcass, bears surprised in close quarters; 3) Human encroaching on a bear's space -- photographer, tourist, etc., approaching a bear close enough to elicit a defensive reaction; 4) Bears responding to a noise attractant -- bears attracted to a hunter attempting to bugle or cow-call an elk or call in predators, or bears associating gunshots with a food source (carcass or gut pile), etc.

This plan recommends that any bears that have killed a human be removed from the population if they can be reasonably identified. FWP will use all available evidence from the incident to identify the bear(s) involved before removal. However, there are times where it may not be possible to determine this absolutely before management actions occur. One alternative considered was to not lethally remove bears that have killed people in response to some natural situation, such as a female defending her cubs. In FWP's judgment, allowing bears that have been known to purposely kill a human to remain in the population will jeopardize overall support for existence of grizzly bears. Education programs for hunters, recreationists, and homeowners will hopefully limit the number of these incidents and the need to remove bears.

Strategies to minimize or resolve grizzly/human conflicts include:

1. Inform and educate the public
2. Facilitate securing attractants
3. Enforce food storage rules/regulation
4. Use of deterrents and/or aversive conditioning methods
5. Appropriate, and when necessary, aggressive management actions to address conflict situations

Hunting To Address Human Safety Concerns

Hunting of large carnivores may play a role in addressing human safety issues and hunting should be considered as a tool in wildlife management programs. Properly conducted hunting programs can impact the behavior of the hunted population, selecting against those animals less wary of humans and/or animals that are comfortable in the vicinity of human activities. This can result in a more wary population over time. Responsible management hunting can help promote tolerance and acceptance of potentially dangerous animals by those directly impacted by the presence of grizzly bears. While the avoidance behaviors of hunted animals may be unfamiliar to some people, the long history of hunting has shown these behaviors are real. These avoidance behaviors include fleeing, hiding, using more secluded habitats or being more active when people are less active, all of which can promote better acceptance and tolerance of grizzly bears. However, the restrictive allowable mortality limits would allow for only a very limited amount of hunting to occur within the GYA. Hunting should not be expected to have a considerable or immediately noticeable impact on grizzly bear behavior.

Livestock Conflicts

Preferred management approaches to manage livestock conflicts:

- APHIS's Wildlife Services (WS) will continue to be the lead agency dealing with livestock depredation through a Memorandum of Understanding (MOU) with FWP (Appendix A). However, depredations will be jointly investigated and grizzly bear captures and removals will be jointly conducted.
- Focus on preventive programs to minimize livestock conflicts with priority toward those areas with a history of conflict or those areas currently occupied by bears.
- Work with beekeepers to assist with electric fences for all apiaries accessible to bears. Re-evaluate and modify as necessary the guidelines for bear depredation to beehives (Appendix B).
- Cooperatively respond to conflicts within 48 hours with at least initial contact by telephone or in person if possible. Response is typically within 12 hours of reported conflict. FWP and WS cooperatively respond to conflicts.

Livestock depredations have historically accounted for a small percentage of the annual grizzly/human conflicts and grizzly bear mortalities. In Montana's portion of the GYA, 4.8% of all conflicts and 8% of all grizzly mortalities are related to livestock depredations (1992-2012). However, with continued increases in grizzly bear distribution, it should be expected that more livestock related conflicts will occur as bears range farther into private and public agriculture lands.

Livestock operators provide many benefits to the long-term conservation of grizzly bears, not the least of which is the maintenance of open space and habitats. At the same time, livestock operations can bring bears into close proximity to human activities and losses by bears can be significant. These losses tend to be directed at sheep and young cattle but also honey bees and chickens, all of which are classified as livestock in Montana. With the recent increasing trend of backyard chicken flocks in suburban and rural areas, the number of both black and grizzly bear conflicts with livestock is increasing. Being adequately responsive to livestock depredations is a critical aspect of the overall success of grizzly management efforts. At this time livestock depredation issues are primarily handled by WS (Appendix A). FWP anticipates this will continue while FWP programs will focus on the prevention of conflicts where possible. FWP anticipates continued partnership with outside groups offering technical assistance and materials to private landowners in order to prevent livestock loss.

The current FWP program encourages landowners to contact grizzly bear management specialists for assessments of bear conflict risk and for ideas on preventative approaches to minimize those risks. FWP advises livestock owners on conflict reduction techniques in attempts to reduce losses, thereby reducing conflicts and resultant grizzly bear mortalities. FWP may provide devices to protect apiaries, corralled livestock, chicken and turkey coops, and stored feeds. Protective supplies include electric fencing, audible and visual deterrent devices, and aversive conditioning devices. FWP also promotes livestock management techniques that reduce bear depredations. In some situations, FWP can simply assist by enclosing bee yards 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. In other situations, livestock that have died due to the consumption of poisonous plants, lightning, or other causes may be used to provide food for bears in areas away from potential conflict sites. By simply removing carcasses from areas around buildings or calving/lambing areas, potential conflicts with bears can be minimized. FWP has a program to redistribute livestock carcasses on the Rocky Mountain Front for this purpose. In some situations the transfer of grazing leases from areas of high conflict to other areas is a way to reduce conflicts when landowners/operators are willing. Conflict management will always emphasize long-term, non-lethal solutions, but relocating or removing offending animals will be necessary to resolve some problems. FWP will continue to explore new techniques and approaches that can be used to protect agricultural products from bear damage.

Providing unfettered flexibility to livestock operators and property owners to deal with conflict situations will fail to provide the necessary assurances for long-term conservation and/or the legal requirements for delisting. No other FWP program for managed species allows for flexibility without constraints yet expecting livestock operators to absorb losses that occurred on

public lands no matter what the cost fails to recognize the significant contribution of private lands and landowners in grizzly bear conservation. Fortunately, Defenders of Wildlife has been providing financial reimbursements to owners for grizzly bear depredation losses through their Grizzly Compensation Trust. This has been beneficial during the recovery process. In addition, the 2013 Montana Legislature passed House Bill 323 which amended MCA 81-1-110 making Montana Livestock Loss Board compensation available for grizzly caused depredation losses. The compensation program will be administered by the Livestock Loss Board and became effective on 1 October, 2013 (http://liv.mt.gov/llb).

Property Damage

Preferred management approaches to manage property damage by grizzlies:

- Focus on preventive measures, including securing attractants, and improving overall sanitation; the agency's bear management specialist works on these issues on public and private lands.
- Seek secure, long-term funding to continue the grizzly bear management specialist position currently stationed in Region 3 and seek additional funding to add a management specialist position in R5
- Respond to conflicts as soon as feasible by phone or in person if possible.

Bears can and do damage personal property as bears are highly attracted to almost any food source. Processed human food, gardens, garbage, livestock and pet feeds, and birdseed are particularly attractive to bears near camps and residential areas. These attractants are often the cause of human-bear conflicts. FWP works to identify potential sources of attractants and works with private property owners, recreationists, and government agencies to reduce and secure the source of these attractants. When the attractant cannot be eliminated, FWP provides technical assistance to protect the property and to reduce the potential for human-bear conflicts. Techniques to prevent damage may include aversive conditioning, electric fencing, deterrent devices, and relocating or removing offending animals. FWP continually explores and uses effective non-lethal damage management techniques and equipment. FWP cooperates with city, county, state, and federal governments to develop systems of managing attractants and pursues penalties for non-compliance with food storage or intentional feeding of wildlife regulations (MCA 87-6-216).

FWP knows that prevention is more effective than response and continually works to keep bears from obtaining unnatural foods or becoming habituated to humans. Keeping bears and people apart is an unreasonable approach as bear distribution and densities would have to be so low that it would preclude the objective of maintaining a healthy bear population and violate recovery and conservation strategy requirements.

Nuisance Grizzly Bear Management

Preferred management approaches to manage nuisance grizzly bears:

- Promote cost-sharing programs that focus on preventative work. Encourage interest groups to work together with FWP to minimize problems and increase tolerance for bears.
- Quickly respond to and resolve grizzly/human conflict situations when possible.
- Minimize the number of bears removed from the population.

- Consider the potential impacts of any nuisance bear response action to the overall health of the GYA grizzly population.
- Respond to nuisance grizzlies in similar fashion to the protocols described within the CS nuisance bear guidelines.

Considering how many people live, work, and recreate in southwestern Montana, it is important to note that conflicts have been minimal, yet conflicts are increasing as the bear population continues to increase in number and distribution (Figures 10 and 11). Annual variation in natural food supplies results in notable variation in nuisance complaints. The primary goal of nuisance bear management is to maximize human safety and minimize all types of conflicts while maintaining viable populations of grizzly bears. Not managing nuisance or 'problem' bears threatens public safety, the satisfaction with grizzly management programs and overall tolerance of the grizzly bear population.

Figure 10. Total grizzly/human conflicts to include all types by year, from 1992-2012.

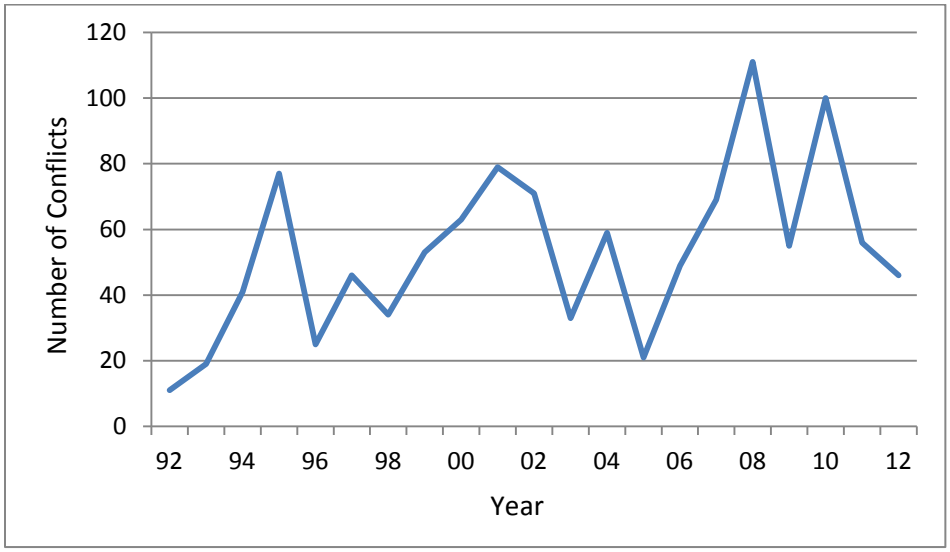
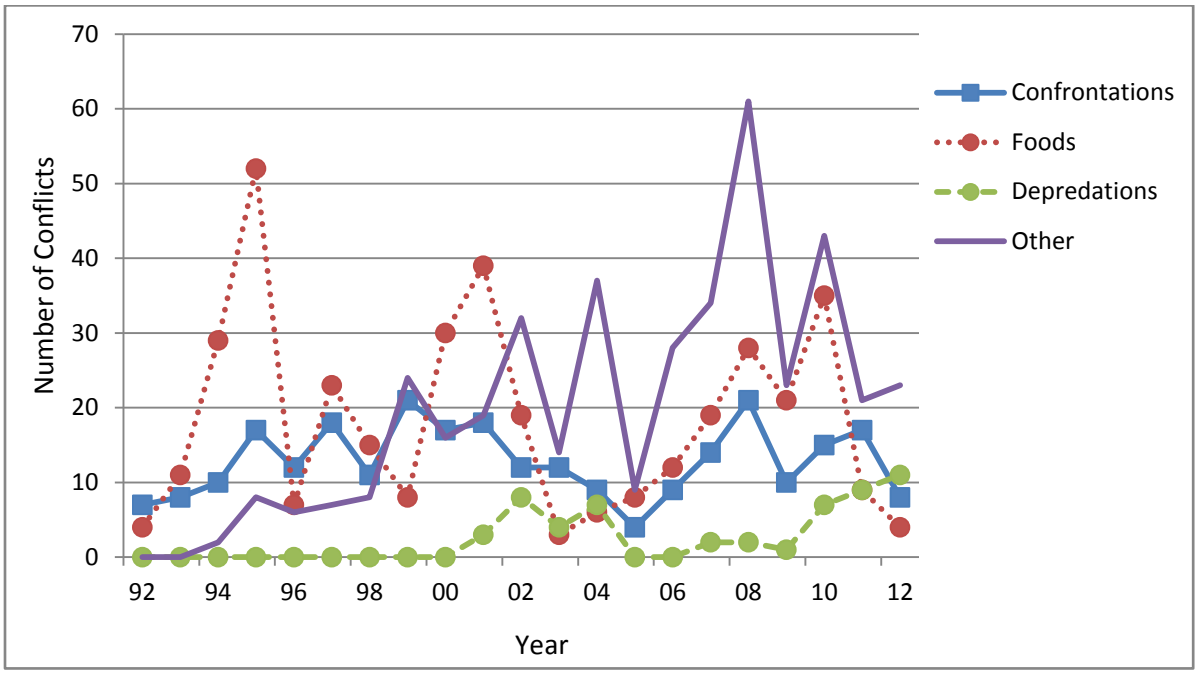


Figure 11. Annual grizzly/human conflicts by type and year (1992-2012). 'Confrontations' include grizzlies injuring, approaching or threatening people or otherwise coming into close proximity to people. 'Food' conflicts include grizzly consumption of garbage, bird seed, livestock feed, orchard fruit, garden produce, etc. 'Depredations' include confirmed losses of livestock such as sheep, cattle or chickens and 'other' conflicts include bears near residences, damaging structures or other property.



From 1993-2002, there was an average of 48 conflicts per year. During 2003-2012, the average number of conflicts was 60 for an increase of 24% since the previous 10 year period. In reality, conflicts have been occurring at a relatively constant rate when considering the increase in human population (25%) over the last 10 years, the increase in the GYA grizzly population (32%), and the 36% increase in grizzly distribution. FWP believes that conflict reduction efforts have been successful in keeping the level of conflicts stable.

Most notable since 2001 are the changes that have occurred in the number and types of conflicts (Table 9). Unnatural food related conflicts have decreased due to government and public efforts to improve sanitation and public awareness. The percentage of confrontation conflicts (close proximity encounters, DLPs, human injuries) that often result in human injuries / bear mortalities decreased slightly, but the geographic area of the occurrences increased. Livestock depredations and "other" types of conflicts, mostly bears near residences or developed sites, have increased as the bear population and bear distribution has increased.

Since completion of the 2002 plan there have been 22 human injuries and one human death from grizzly-human interactions in the Montana portion of the GYA. Three additional incidents involved a bear making physical contact with a person, but no injuries were received. This is an average of two human injuries per year in MT's portion of the GYA, from 2002 thru 2012.

During the previous 11 year period (1991–2001), an average of one person per year was injured. During 1993, 1998, 1999, 2005 and 2006 no human injuries were reported or investigated. Of the people actually injured during a grizzly bear(s) encounter from 2002 thru 2012, 5 were recreationally hiking, 3 were recreationally camping/sleeping during evening hours, 1 was mountain biking, 6 were archery hunting, 6 were rifle hunting and 1 was severely injured from being shot by his hunting partner. Nearly all human injury incidents (19) involved surprise encounters with female bears and cubs. A wide array of situations precipitated these events and this is why it is so difficult to predict or eliminate these chance encounters. Some individuals had been unwisely tracking the bear(s), some encountered bears at a food source, some were either rapidly or quietly moving and some were scent/visually camouflaged while hunting. To FWP's knowledge all grizzly bear caused human injuries have been reported and investigated. This information is annually reported through the IGBST yearly reports and covered by local and sometimes national media.

Table 9: Conflict types by percent of total and by 10 year periods, 1993-2012.

	Conflict Type			
Years	Confrontations	Depredations	Foods	Other
1993-2002	28%	2%	46%	24%
2003-2012	20%	7%	42%	49%
Average	24%	5%	44%	37%

Confrontation conflicts (encounters, DLPs, human injuries) are nearly impossible to alleviate due to the randomness of the location and timing of the occurrences. Confrontation conflicts generally occur during fall big game hunting seasons, but they also occur with people engaged in summer recreational activities. In the GYA, all grizzly bear caused human fatalities have occurred with people involved in non-hunting related activities. As bear populations increase in number and distribution, the geographic area and the number of potential public involved increases.

In recent years, most of the livestock depredations are occurring on private land beyond the monitoring area or the USFWS suitable habitat line in areas of little or no recent history of grizzly bear activity. Many of these areas are marginal for bear habitat leaving immigrant bears with few high quality, natural food sources. There is little that can be done to minimize depredation conflicts on open range land and therefore, management actions most often involve capture, relocation or lethal removal of the depredating bears. Developed sites and the associated attractants of natural or unnatural grizzly foods are the cause of many of the other conflicts, e.g., property damage, human habituation, food conditioned, and vehicle collisions. These types of conflicts are usually resolved through aversive conditioning techniques and/or securing attractants.

Upon initial delisting and implementation of the CS in 2007, federal funds were allocated to management agencies for grizzly management. FWP had initiated an improved sanitation program in 2006 that was boosted with these federal funds in 2007 to place 214 bear-resistant garbage containers on the landscape in the Gardiner, Cooke City/Silver Gate, West Yellowstone and upper Boulder areas. Several conservation groups joined this effort after it was established and have collectively provided an additional 81 bear-resistant garbage containers for the

Gardiner and Cooke City/Silver Gate areas. This sanitation effort has helped reduce the grizzly/human conflicts that result in food conditioned grizzlies, property damage and unsafe conditions, ultimately reducing management actions on grizzly and black bears.

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 PCA, greater consideration will be given to humans when bears and people come into conflict, provided problems are not the result of intentional human actions. Active management aimed at individual nuisance bears regardless of location is often required as part of nuisance bear management. Nuisance 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 decision.

Definitions employed in nuisance grizzly management (*taken from the GYA Conservation Strategy):

Grizzly/Human Conflicts*: incidents in which bears injure people, damage property, kill or injure livestock, damage beehives, obtain anthropogenic foods, damage or obtain garden and orchard fruits and vegetables.

Nuisance bear: Any grizzly bear involved in a grizzly/human conflict that results in agency management activity.

Unnatural Aggression*: Behavior that includes active predation on humans, approaching humans or human use areas, such as camps, in an aggressive way, *or* aggressive behavior when the bear is unprovoked by self-defense, defense of cubs, defense of foods, or in a surprise encounter.

Natural Aggression*: Behavior that includes defense of young or food, during a surprise encounter, or self-defense.

Food-Conditioned Bear*: A bear that has received significant food reward of human foods such as garbage, camp food, pet food, or processed livestock food, and persistently seeks these foods.

Habituated Bear*: A bear that does not display avoidance behavior around humans or in human use areas such as camps or town sites or within 100 meters of open roads.

Relocation*: The capture and movement by management authorities of a bear involved in a conflict with humans or human-related foods, to remote areas away from the conflict site, usually after fitting the bear with a radio collar.

Repeat Offense*: The involvement of a bear that has been previously relocated in a nuisance situation, or if not relocated, continues to repeat a behavior that constitutes a grizzly/human conflict.

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

Depredation: An action generally associated with the killing of domestic livestock animals.

Range of techniques to be used in dealing with nuisance grizzly bears:

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

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

Translocation: FWP will initiate capture operations when deemed appropriate and necessary or when human safety is a concern. Capture efforts will be initiated when they are practical, and when they can be conducted in a timely and safe manner. Management agencies may rely on translocation of some problem bears as this approach provides time to deal with the cause of conflict and provides the bear an opportunity to remain in the population. However, relocation is often a short-term solution to an immediate crisis because many bears return to the general area of conflict or may simply repeat the problem behavior in the new area. Survival of translocated bears is largely affected by whether the bear returns to the capture site. Return rates are most affected by distance transported, and age and sex of the bear. Return rates decrease with translocation distances of $\geq$75 km. Subadult female bears return the least. Translocation of female bears who later contribute back to the population through reproduction is considered particularly successful. In general however, translocation is often the final action for conflict bears as low survival and high rates of return to the conflict site ultimately end in natural or human-caused death of the bear.

Removal: FWP will employ live or lethal control techniques when other options are not practical and a reasonable opportunity for removal exists. Captured grizzly bears identified for removal may be permanently loaned to public research institutions or accredited public zoological parks for educational or scientific purposes as per state laws and regulations. Grizzly bears not suitable for these purposes will be euthanized.

On the Ground Approaches to Nuisance Grizzly Bear Conflict Prevention and Management:

1. Provide conflict-avoidance information and education to people living, working, and recreating in grizzly bear habitat. Technical assistance, including information on preventative and aversive techniques is available to property owners, outfitters, and land managers. Specific information and education recommendations are addressed in the Education/Outreach Section.
2. Provide timely information to the public and land management agencies about current bear distribution, including relocations, natural food conditions, known bear activity, potential and current conflicts (news releases, etc.).

3. Encourage land management agencies to inform permittees about practices to avoid and minimize conflicts.
4. Monitor situations where the activities or behaviors of bears inhabiting the area increases the likelihood of conflicts.
5. Work with livestock operators and land managers to implement strategies that minimize the potential for bear damage.
6. Work with property owners, recreationists, and land managers to identify and resolve potential conflicts. Provide property owners deterrent or aversive conditioning supplies when appropriate for management of specific conflicts.
7. Investigate all grizzly/human bear conflicts as soon as practical. Property owners will be advised of the process to secure compensation if warranted. Information regarding ongoing conflicts is shared with potentially affected neighbors, livestock producers, permittees, or others when possible in order to reduce risk of further conflict.
8. Attempt to remove any grizzly bear displaying unnatural aggression or considered a threat to human safety, as quickly as possible.
9. Attempt to remove any grizzly bear displaying natural defensive behavior when, in the judgment of FWP, circumstances warrant removal and non-lethal methods are not feasible or practical.
10. Aversively condition, relocate, or remove any grizzly bear displaying food-conditioned, or habituated behaviors, or damaging property based on the individual bear and specific details of the incident. Management authorities will make these decisions after considering the cause, location, and severity of the incident or incidents.
11. Preemptively move a grizzly bear when it is in an area where it is likely to come into conflict with humans or their property. Conversely, temporarily exclude people from an area if the situation has a high risk to the public, e.g. a carcass on a trail being fed on by grizzlies.
12. Grizzly bears may be relocated several times if FWP determines it is appropriate.
13. Grizzly bears involved in chronic or significant depredations or bears with a high probability to cause significant or chronic depredations, will be removed when practical.
14. Grizzly bears relocated due to conflict situations will be released in a location where the probability of future conflicts is lowest. Land managing authorities will continue to provide adequate and available sites for relocations.
15. Any grizzly bear to be relocated is uniquely marked (ear-tags, tattoo, microchips, etc.) and radio collared (if appropriate) to follow movements as necessary.
16. Grizzly bears not suitable for relocation will be removed.
17. Train and equip appropriate state and federal agency personnel to manage conflicts.
18. Respond to all grizzly/human conflicts within 48 hours of reporting and base management actions on the circumstances of each individual situation.

Hunting of Grizzly Bears

Preferred management approaches relative to sport harvest of grizzly bears:

- Incorporate regulated harvest after delisting as part of Montana's long-term conservation program.
- Design a hunting program that is justified and open to public review, similar to the processes used for all other managed species in Montana, and coordinated with surrounding states to ensure mortalities from all causes are within the sustainable population mortality limits.

- Give additional consideration to the female segment of the population in any proposed hunting program. For example, the killing of females accompanied by young will be prohibited.
- Utilize any hunt as part of overall species management and as a way to garner additional public support and ownership for long-term persistence of the grizzly population in Montana.
- Encourage all hunters and recreationists to carry bear spray in bear habitat.

Managing grizzly bears as a game animal (MCA 87-2-101) confers additional recognition to them as a valuable wildlife species: A species that is protected from illegal harvest and prioritized for population monitoring and research. Regulated harvest of game animals is one of the major tools that assures the maintenance of predator and prey populations in Montana and elsewhere. The Interagency Grizzly Bear Committee (IGBC) supports the use of regulated hunting in recovered and delisted populations as one approach to help manage numbers and distribution of bears to promote coexistence and help minimize conflict. Although specifics regarding the hunting of a recovered grizzly bear population will be unique to the ecosystem and legal jurisdictions involved, IGBC supports hunting regulations that reflect the best available science, are adaptable to changing factors, are established in a public process, and are consistent with standards in the ecosystem specific Conservation Strategies. It is therefore intended that the eventual regulated harvest of grizzly bears will be a part of Montana's program and commitment to grizzlies, when and where appropriate.

Regulated hunting as a management tool for grizzly bears has a long successful history in Montana and was conducted until 1991. Regulated hunting can result in the removal of unwary bears or bears that associate with and habituate to people. Two of the three bears taken in the last legal Montana hunt were known problem bears. Regulated hunting can also reinforce human avoidance behaviors different than those exhibited by unhunted populations. Ultimately, these avoidance behaviors and the removal of unwary bears promotes the long-term survival and social tolerance of the grizzly population.

Wildlife populations sometimes produce surplus animals that can be removed without dampening growth of the population. Population estimates and trend data for the GYA indicate this has been the case, however, much of the 'removal' has been from unregulated mortalities. Any regulated public hunt must be evaluated in the context of these unregulated mortalities, overall population goal, and the overall bear management program and its efforts to promote management and ongoing recovery of this species. Regulated hunting programs or recommendations will be conservatively applied and while hunting may alter the timing and nature of grizzly use of some habitats, any negative impacts to the population should be negligible based on the anticipated low level of harvest opportunity.

From the 2012 IGBST population demographic review, the adult male portion of the population has been increasing throughout the ecosystem. The removal of adult males in relatively remote areas through hunting will not negatively impact the overall population. Removal of adult males may in fact enhance adult female, cub and sub-adult survival in areas with less human presence, thereby allowing survival in areas where fewer conflicts occur.

Regulations that direct harvest toward males and away from adult females may allow for higher hunter quotas. Hunters would primarily remove males during early spring seasons due to their earlier emergence from dens. Similarly, hunters would primarily remove males during late fall seasons as they are last to enter dens. Females accompanied by newborn cubs are the last to emerge and move away from den sites and the first to enter dens in the fall. Using season timing and protective regulations for females with young, FWP was successful in focusing harvest on males during previous regulated grizzly hunting. Similar season setting techniques would be used to focus harvest on males in future hunts.

FWP would likely not institute hunting seasons in areas where bear density is low and harvest mortality is not sustainable. In addition, FWP would likely not institute hunting seasons in areas where bear density is low and removal of bears would negatively impact the potential for movement of grizzlies between ecosystems when desired and acceptable.

In summary, FWP recommends a regulated hunting season be a part of the overall grizzly bear management program for the following reasons:

1. Legal harvest can be managed so as to have minimal impact on the population as a whole.
2. Hunters have legally harvested problem bears in the past and would be expected to do so in the future, potentially reducing grizzly/human conflicts in some areas.
3. Hunter harvest may be partially compensatory in that it may remove some nuisance animals.
4. Hunters may remove unwary or bold bears and hunter activity may cause other bears to be wary of humans, thereby decreasing the need for FWP control of problem bears.
5. Hunting promotes acceptance and tolerance of this large and potentially life threatening animal by some of the local public who are asked to live with grizzlies. This acceptance and tolerance is key to long-term survival of the bear.
6. Removal of adult males can increase cub survival and recruitment, which in turn, can promote a more stable population.
7. Hunters have been and continue to be one of the strongest supporters of long-term conservation efforts. Hunter dollars have purchased more habitat than any other group in the GYA ultimately providing for a variety of species including grizzlies. This strong connection between hunters and habitat is critical to continued successes in 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.
8. Hunting activity provides revenue from license sales and excise taxes on equipment to support wildlife management and the enforcement of wildlife management regulations.
9. The presence of licensed hunters can reduce illegal activities. Every year ethical hunters in Montana report people who have violated laws protecting wildlife.

Regulated hunting has been used as only one tool among many to provide for the long-term recovery and survival of grizzly bears. A regulated public hunt must therefore be evaluated in the context of an overall bear management program. There are also many statutes, regulations, and considerations that will affect any proposed hunt to include:

1. Upon delisting, hunting will be proposed only after all components of the grizzly bear management program and CS are being adequately implemented.

2. The justification for any proposed hunt will be available for public scrutiny and comment prior to any decision or possible implementation.
3. MCA 87-5-302 regulates the hunting of grizzly bears, including the establishment of tagging requirements for carcasses, skulls, and hides; and establishing requirements for the transportation, exportation, and importation of grizzly bears. The Commission shall establish hunting season quotas for grizzly bears that will prevent the population of grizzly bears from decreasing below sustainable levels and with the intent to meet population objectives for elk, deer, and antelope.
4. Commission rules make it illegal to harvest/take black bear cubs or females with young and it is expected the Commission would enact a similar rule for a grizzly hunt.
5. MCA 87-2-702 states a person may take only one grizzly bear in Montana with a license authorized by 87-1-701.
6. The Commission has the authority to close seasons at any time if mortalities from any cause have been excessive, i.e. if the yearly total ecosystem-wide mortality limits are near to or have been exceeded.
7. Damage hunts, targeting individual problem bears, have proven to be of limited value.
8. MCA 87-6-401 makes it illegal to hunt any game animal with the use of bait.
9. MCA 87-6-404 makes it unlawful to chase any game animal with a dog.
10. Bear hides and carcasses must be presented for inspection. Hunters are prohibited from wasting bear meat unless the meat is determined to contain trichinella. Evidence of species and sex of animal must remain attached to carcass or parts to be legally possessed or transported.
11. MCA 87-6-202 makes it unlawful to possess, ship or transport grizzly bear parts that have been unlawfully obtained.
12. MCA 87-6-206 makes it 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, with ample opportunity for public comment. Season structure for most big game species is adopted on a biannual basis, while quotas are set annually.

FWP considered eliminating hunting as a part of its grizzly bear management program. However, in FWP's judgment, this approach would eliminate a key local and national constituent group with demonstrated commitment to the species and its habitat.

FWP targets all types of recreationists and workers in grizzly country for education on the benefits of carrying and knowing how to use bear spray. FWP has considered requiring all hunters to carry bear spray while in the field, yet believes that there are significant liability and enforcement issues around a "mandatory" approach. In addition, carrying spray can give people a false sense of security and replace common sense and thoughtful backcountry practices. Bear spray can be ineffective in windy areas and in certain weather conditions, and individual bears can respond differently to the spray. Also, there are only a few manufacturers who produce bear spray that meets EPA ingredient requirements and the required propellant duration. Approved bear spray is a valuable tool, but it cannot replace knowledge of bear behavior and appropriate human behavior in bear encounter situations. FWP makes bear spray available to field personnel operating in bear country and encourages employees to carry and know how to use it.

Enforcement

Preferred approaches for grizzly conservation through enforcement authority:

- Enforce statute that criminalizes intentional feeding of both black and grizzly bears (MCA 87-6-216).
- Investigate and prosecute violations of Montana law relative to the protection of grizzly bears (MCA 87-5-301, 87-5-302).
- Assist federal agencies as requested to enforce federal regulations (i.e., CFRs).

FWP enforcement efforts concerning grizzly bears are focused in three areas: patrols of both wilderness and non-wilderness areas, grizzly/human conflict control to include instances of property damage and human injury or death, and illegal take investigations.

Wilderness and non-wilderness areas are patrolled during the general hunting season and at other times throughout the year. Hunter camps are checked for harvested animals, food storage compliance, and compliance with outfitter regulations. Although FWP enforcement has no authority to enforce federal food storage orders they do communicate rules and regulations to those they contact and they do record information for use by federal enforcement personnel.

Response to nuisance bear complaints can involve many FWP personnel, although Enforcement Division personnel are frequently the first on the scene. Response to grizzly/human conflicts that result in human injury or death is managed by the Enforcement Division and handled under a formal response/investigation protocol (Wildlife/Human Attack Response Team). This system integrates other state, local and federal personnel in the response and provides a structured approach to dealing with these types of major incidents.

FWP enforcement personnel investigate and prosecute all violations involving illegal grizzly bear 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. Current state law sets restitution for illegal take of grizzlies at an amount of $8,000 in addition to the fines and imprisonment tied to the misdemeanor or felony charge. Anyone found guilty of illegal grizzly take will also forfeit any current hunting, fishing, recreational 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 period. Fines for the interstate movement of illegally killed or possessed animals can also be imposed.

The USFS manages food storage restrictions on their own lands. The county sheriff's office enforces county ordinances on food storage. FWP personnel enforce food storage rules on all WMAs that fall under an annual rule adopted by the FWP Commission in 2013.

A statute (MCA 87-6-216) first passed in 2001 makes it illegal to provide food attractants to bears or improperly store food attractants, including garbage. Individuals who intentionally feed or attract bears to their residence create problems that impact their neighbors, jeopardize human safety, and result in problem situations. FWP personnel have no enforcement authority to enforce food storage regulations on Forest Service lands, yet FWP personnel spend a great deal of time in backcountry areas checking people on national forest lands. When violations are

encountered, they attempt to ensure compliance and refer the infraction to USFS or BLM law enforcement. Added presence and patrol by federal resource officers will become even more critical in reducing grizzly/human conflicts. This will be increasingly important as the grizzly bear population expands and, food storage regulations are required on additional national forest lands.

The 2002 EIS stated that FWP would seek authority to enforce food storage regulations on federal lands. However, in the 10 years since publication of that document the cooperative efforts between FWP and Federal land managers have been successful in enforcing food storage without a formal MOU. FWP officers work closely with Federal law enforcement in monitoring food storage compliance and talking to recreationists about the importance and legal requirements of food storage as stated. The cooperative efforts of all agencies have no doubt contributed to the ability of bears to persist in close contact to humans. Anecdotally, the number of non-compliance cases have decreased as recreationists recognize the importance of clean camps for both the good of the bear and their own personal safety. Education and outreach efforts by all agencies have no doubt contributed to compliance. These efforts to work cooperatively and educate the public will continue.

By Commission rule, FWP personnel enforce federal travel restrictions during Commission-designated hunting seasons. At other times, personnel refer violations to USFS or BLM law enforcement. They also regularly work with USFS and BLM law enforcement in saturation patrols, both aerial and ground-based, to ensure compliance with travel management plans.

The 2002 EIS stated that FWP would seek authority to enforce travel management plans. FWP is no longer pursuing this authority as FWP believes its current ability to enforce travel management plans during hunting seasons has been adequate to protect grizzlies. In non-hunting seasons FWP works closely with the Federal land management agencies to monitor and report violations of plans as stated above.

There is currently a Memorandum of Agreement between the USFWS and FWP that outlines joint responsibilities for violations of federal and state law (Appendix C). The agreement also addresses responsibilities and guidelines for joint investigations by Montana game wardens and USFWS special agents. The MOU between FWP and WS outlines responsibilities and guidelines for joint investigations by WS and FWP in grizzly bear depredation situations (Appendix B).

A visible enforcement presence is critical to program success and additional resources would help implement new responsibilities. These would include sufficient funds for equipment and necessary overtime required to operate in remote areas and, ultimately, additional staffing. FWP will work cooperatively with the USFS and BLM to identify additional opportunities to support FWP in these efforts.

Education and Outreach

Preferred Approaches for Continuing Education and Public Outreach:

- Include hunter education class lessons that cover safety while hunting in bear county.
- Continue to expand efforts to assist hunters with identification of black versus grizzly bears through publications and mandatory training and testing for individuals interested in hunting black bears.
- Implement ways to target education efforts towards "new" and current Montana residents regarding grizzly/human conflicts and human safety while in bear country.
- Continue to work with the Board of Outfitters to ensure outfitters have adequate knowledge of appropriate practices for operating in bear country and encourage outfitters to provide training to clients, and to provide clients with bear spray and the knowledge of how to use it.
- Work with private organizations, wildlife advocacy groups and other interested parties to promote 'living in bear country' messages including safety tips for recreating in bear habitat and the utility and proper use of bear spray.
- Integrate education and public outreach with enforcement of food and garbage storage rules.
- Use education and outreach to minimize human activities that can lead to grizzly/human conflicts.
- Work with local planning entities to address the needs of grizzly bears in new developments and new residential areas, and provide continued support to existing communities to prevent and reduce bear conflicts.

Management strategies are unlikely to succeed without useable, state-of-the-art public information and education outreach programs. A partnership based information and education approach involving FWP, other agencies, local communities, and private interests, can result in minimal grizzly/human conflicts and a strong sense of agreement among Montana residents about the state's bear goals and management programs. Expanded and continued education and outreach efforts are essential to the objective to allow for expanded bear distribution and long-term survival of the species.

Human safety is of utmost concern when hunting in grizzly bear country. In order to teach young, old, and first-time hunters the proper techniques for hunting in grizzly country, FWP incorporates safety lessons for hunting in bear habitat in each hunter education class including general hunter education, archery hunter education, and the online hunter education courses. Topics covered include bear identification, bear awareness, the proper use of bear spray, and meat retrieval. There is a special focus on the proper use of bear spray during the field day portion of the courses in order to allow hunters to gain confidence in using bear spray as a deterrent. In Montana, no individual born after January 1, 1985 may apply for and receive any hunting license unless the person possesses a hunter safety certificate. Current records show that approximately 7,000 students are certified each year through FWP's hunter education program.

In 2001, the Commission approved mandatory bear identification testing for black bear hunters in Montana prior to their purchase of a black bear license. This requirement aims to reduce misidentification by black bear hunters as grizzly bear encounters are on the rise. Black bear hunters must be aware that they may encounter grizzly bears where they have not in previous years. Black bear hunters must sharpen their ability to tell the difference between black bears and grizzly bears to prevent and avoid mistaken identity killings of grizzly bears. The bear

identification training program is available to all citizens and can help non-hunters also learn to distinguish between the two species. The test is available on line at www.fwp.mt.gov, by mail, or at FWP offices or license providers. A hunter must pass the test with a minimum score of 80% before they can purchase a bear hunting license. A hunter can retake the test until a passing grade is obtained. Annual recertification is not required. FWP believes the test for black bear hunters, as currently delivered, is effective in reducing mistaken identity mortalities. Due to hunter awareness there have been relatively few hunter caused mistaken identification mortalities (4 mortalities in the last 11 years).

The Commission is concerned about the impact that mistaken identity killings of grizzlies could have on maintaining a recovered grizzly bear population or on recovery in areas that remain below objective. While the Commission believes mistaken identity killings can be reduced through education, some consider a better solution to be elimination of the black bear hunting season in Montana. That action would minimize FWP's ability to manage black bears and create a myriad of other problems essentially lessening the support for management and expanded distribution of grizzlies.

In order to provide education resources to 'new' and long-term residents, FWP maintains a website dedicated to 'living with bears' type education (fwp.mt.gov/FishAndWildlife/LivingWithWildlife/). This online site includes information on living and recreating in bear country, hunting in bear country, bear safety, and bear education. The website is an online tool that citizens and educators can use to learn more about bear safety and reduce bear conflicts. The site has a special section with tools for teachers to use in their classroom. It also provides contact information for the individuals involved in bear management in each region.

FWP encourages federal land management and wildlife agencies to continue playing a role in public education in order to protect bears and people while assuring wilderness values. FWP coordinates with these agencies to provide bear safety literature at their respective trailheads and at offices in occupied grizzly habitat. FWP will continue to work with the USFS to maintain an appropriate number and location of bear resistant food storage containers, meat poles, and bear resistant garbage containers (at all campsites) in occupied or potentially occupied areas.

FWP promotes the grizzly bear as a valuable state resource through school and community presentations, community-based workshops, news releases, magazine articles, social media outlets, and radio and television spots. FWP emphasizes the value of educating children about bear safety and identification. FWP has a 'head and hides' check out program that is available to educators and non-profit organization. FWP and partners have developed a "Getting Along with Bears" coloring and activity book.

The 2002 EIS stated that FWP would encourage the Board of Outfitters to require all outfitters and guides operating in bear country to be certified in grizzly/human safety. However, in the 10 years since publication of that EIS the documented number of conflicts between outfitters and grizzlies have been minimal and the number of outfitter caused bear deaths has decreased (K. Frey, pers. comm.). FWP has worked diligently through outreach efforts and trainings to ensure outfitters have adequate knowledge of appropriate practices for operating in bear country. FWP encourages outfitters to provide trainings to clients and to provide clients with bear spray and the

knowledge of how to use it. It is obviously in the best interest of the outfitters to keep their clients safe. This, combined with their current record of limited conflicts has minimized the need for any formal outfitter and guide certification. Outfitters in Montana are under the jurisdiction of the Montana Board of Outfitters and the Montana Department of Labor and Industry, which is responsible for issuing outfitting licenses and the enforcement of laws regulating the outfitting industry. Outfitters using federal lands are also overseen by the respective federal land management agencies. Education and outreach efforts by all agencies have no doubt contributed to outfitter and guide success of operating in bear country and efforts to educate outfitters, guides and other hunters will continue.

FWP has developed a set of fish and wildlife recommendations for subdivision development in Montana. The goal of this document is to help Montana communities and counties mesh subdivisions for people with healthy habitats for fish and wildlife. The document may be viewed online on the Living with Wildlife page at www.fwp.mt.gov. The document contains a section about the recommended subdivision design standards for addressing grizzly/human conflicts. FWP and cooperating partners strive to work with homeowner groups in areas with bear activity to improve sanitation, increase the use of bear-resistant containers, and increase property owner knowledge of living in bear country. FWP recognizes that there are a large number of citizens moving into bear country for the first time. FWP continues to work to educate new residents of steps that can be taken to reduce bear conflicts.

Examples of current FWP education and outreach programs on living with grizzlies;

- Presentations to schools, colleges, private businesses, civic groups, sportsmen's groups, and local watershed groups.
- Presentation of public and private land bear conflict reduction & safety programs.
- Presentations to rifle and archery hunter education classes.
- Presentations to outfitters and guides in areas of high bear use and/or past grizzly/human conflict.
- Bear safety presentations to field crews and educational classes.
- Timely interviews with newspaper, radio, and TV reporters following conflicts or during times of grizzly activity.
- Production of media clips regarding use of bear spray, safety during spring antler hunting, safety during big game hunting seasons.
- Use of social media to reach younger audiences with the 'Living in Bear Country' messages.
- Maintenance of an FWP website devoted to bear identification and bear awareness (www.fwp.mt.gov/fishand wildlife/livingwithwildlife/bebearaware/).
- Maintenance of a public information plan designed by the FWP Conservation and Education Division.
- Support for publication and distribution of education and outreach material including:
    - "Bears of Yellowstone" brochure
    - "Hiking in Bear Country" brochure
    - "Visiting Bear Country: How to Avoid Bears" brochure
    - "Living with Grizzlies" brochure
    - "Living in Bear Country" brochure
    - "Bear Spray" brochure

    - "Who's Who? Know your Bear" brochure
    - "Be Bear Aware" children's handout.
    - "Attention Hunters": bear safety license holders
    - "Attention Hunters": bear safety postcards
- Production and distribution of the "Staying Safe and Working in Bear Country" video.
- Maintenance of trail head signs with safety in bear country recommendations and food storage regulations.
- Posting trail heads with information regarding recent, potentially dangerous grizzly activity in the area.
- Cooperate with USFS on food storage regulations & bear safety issues.
- Dissemination of information regarding FWP and land management agency food storage regulations.
- Dissemination of information regarding the state law that makes it illegal to intentionally feed bears.
- Provide cities and counties information for improving refuse collection sites.
- Assist community groups such as the Gardiner Bear Aware Group in their efforts to promote 'bear awareness' and responsible behavior in bear country.
- Assist communities in addressing sanitation issues through education and outreach, e.g., South Gallatin County Ordinance to address sanitation in upper Gallatin Canyon and Big Sky.
- Frequent contact with the public regarding 'bear awareness', appropriate 'living in bear country' practices, and current conflict situation information.
- Mailing of 'bear awareness' and safety information to all FWP special permit holders, e.g., moose, goat, sheep tag holders.
- Assist bee-keepers and poultry producers in reducing conflicts through education and outreach.
- Work with others such as Defenders of Wildlife, to increase education and outreach to target audiences.
- Use outreach efforts to encourage the use of electric fence where appropriate to reduce bear conflicts and subsequent management actions.
- Provide internal (FWP) education and training.

Future Research

FWP has and will continue to conduct research into population monitoring methods in collaboration with the IGBST. Adult females and females with COY are considered the most important segment of the grizzly population and consequently are a major focus of the IGBST monitoring program. Efforts to document the distribution and abundance of females with cubs within the GYA began in 1973 and have continued to date. During the past 10 years (2003-2012), IGBST has estimated an average of 50 unique females with cubs of the year in the GYA annually. When combined with other data, these counts serve as the basis for estimating total population size and determining whether annual mortality is sustainable. Sustainable mortality establishes the upper limit on the number of grizzly deaths that can occur within a healthy population. Previous research has shown that population size is underestimated (Schwartz et al. 2008), likely resulting in conservative mortality limits. Recent research efforts of IGBST have focused on addressing this bias using mark-resight techniques (Higgs et al. 2013). Further

investigation of this technique is underway to improve its application in the GYA. Assessment of this technique is needed to determine the feasibility of estimating grizzly density at a large GYA scale based on findings from smaller focal study areas.

FWP will continue to conduct research captures of grizzly bears in Montana to monitor survivorship, habitat use, change in distribution and ensure that enough female and male bears are telemetry marked for demographic analysis. Assessment of other techniques such as camera and hair traps, and DNA population monitoring is needed to determine the most cost efficient and effective method of tracking the expanding population and to ensure adequate information is available for management and the public.

As the delisting process proceeds, FWP will assess the potential impacts of hunting on the GYA grizzly population size and distribution. Any future hunting losses would be considered within annual population estimates and annual mortality limit calculations. Continuous evaluation of the impacts of sport harvest are part of FWP's management for all harvested species.

FWP will continue to collaborate with the IGBST on ongoing research to determine if the slowed growth of the overall GYA grizzly bear population is a factor of density dependence and/or food abundance. Initial indications are that both factors may be playing a role. In any healthy population, one should expect that the population will slow or stabilize at some point in time, due to density and carrying capacity of the habitat. FWP is assessing the natural biological carrying capacity of actual or potential grizzly bear habitats through cooperative efforts with other agencies. Such assessments are important to ensure that management efforts for grizzly bears are appropriate throughout their range in Montana.

Finally, FWP will continue to conduct and collaborate on research into the importance of anthropogenic impacts on bear populations and habitats. As documented elsewhere, roads, commercial activities (e.g., mining, logging), livestock grazing, urban sprawl, and recreation (e.g., snowmobiling, off road travel) may impact the ability of bear populations to persist in an area. More research is needed to determine threshold levels at which these impacts become significant and to determine mitigation actions to limit negative impacts to grizzlies when possible. Similarly, it is important to recognize threshold levels of social tolerance of grizzly bears and to continue assessing the most effective ways to minimize conflict between humans and grizzlies.

Other priority grizzly research needs will be considered and prioritized by FWP during the life of this plan, using the standard research prioritization process used to identify all priority wildlife research needs. Under this plan, proposals are developed and submitted for review by wildlife program managers and division staff, and resources are directed to priority projects through consensus. Before FWP dedicates resources (staff time, money, data, etc.) to a research effort, for grizzlies and other wildlife or habitat, the project will be prioritized through this process. Today's grizzly research techniques can be expensive and labor intensive, requiring agreement on the need to dedicate resources prior to initiatation of a research project.

Costs and Funding

The grizzly bear is a species of national interest. The USFWS, through congressional appropriations, has funded FWP and other managing agencies for the initial implementation of the GYA Conservation Strategy (CS) with funding to bridge the time period between federal funding under listed status and state funding after delisting. This FWS bridge funding was to allow the state time to get internal state funding (or some other funding source) in place to fund Montana's responsibilities to implement the CS. As this FWS bridge funding was not intended to cover the state responsibilities under the CS in the long-term, a funding mechanism to support Montana's responsibilities for Yellowstone grizzly bear management is necessary. Such stable funding ensures all state and federal agencies have the ability to effectively manage this species under the direction of the CS once it is recovered and delisted.

The minimum estimated costs to implement this plan are presented below (Table 10). This is not intended to be a detailed description of program costs, but it does provide a yearly average of current and anticipated expenses tied directly to personnel that work exclusively on grizzly bear management and their operations costs. Another 1500 or so hours of personnel time for 27 FWP staff persons ranging from local conservation wardens time to administrators time can be assumed necessary for grizzly bear management throughout the year. This amounts to an additional $50,000 in personnel time spent on this work. Operations dollars to include vehicle mileage are not tracked separately from other work making it difficult to estimate additional operations for these 27 employees. Employees with duties such as a conservation warden are tasked to work on whatever high priorities need attention. This ranges from responding to game damage to responding to grizzly/human conflicts or assisting with grizzly capture. The coverage of this work out of FWP license and Pittman Robertson dollars is allowable and appropriate.

FWP does acknowledge the need for a bear management specialist to be based in the Billings office. Approximate cost of this new position would be $60,000. Securing the funding for this position as well as the FTE has proven difficult but as grizzlies expand their range further east of Yellowstone National Park the press for this type of assistance may be prioritized over funding for other new positions. Cooperative funds could be sought from outside partners.

Independent efforts, not reported in Table 10, by staff at the FWP Montana Wild Center to implement a bear aware program for school and civic groups costs could be as high as $15,000 but staff time and operation dollars are difficult to track as staff work on a variety of projects. In addition these programs are targeted towards awareness for hunters, recreationists and those who live in bear country throughout Montana, not just within the area covered by this plan.

Montana's cost to implement a grizzly bear management plan as shown in the 2007 Conservation Strategy was estimated to be over $400,000. A budget this large would allow FWP to do additional work such as hiring a bear specialists in Region 5 and assigning more staff to grizzly specific work. In the absence of such a budget, implementation of the grizzly bear management program is divided among many personnel as indicated. We have a history of success in doing this with other species management programs and believe we can continue to operate in this manner. Annual budgets are greatly impacted by both federal and state processes. Annual funding fluctuations impact program priorities.

Table 10. FWP Southwest Montana Grizzly Bear Management Plan minimum expenses.

Expenses	Current State Expenditures	Current Federal Expenditures
Bear Management (includes investigations of human injuries, bear mortalities, site conflicts, sanitation, conflict reduction materials, staff time and operations)	$91,500	$65,000
Monitoring (observations of females with cubs, radio tracking, DNA work, population expansion tracking and FWP Laboratory expenses)	$5,000	$22,000
Outreach (Conservation Education information releases, hunter education, etc.)	$2,500	$1,500
Grand Total	$100,000	$88,500

Irreversible/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 EIS. 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.

The grizzly bear management approaches recommended in this document should not result in any irreversible/irretrievable commitment of resources with few exceptions. If expansion of bears proves untenable in some areas because of issues related to public safety, FWP has demonstrated the ability to remove unwanted or nuisance bears. The level of recommended allowable mortality will not result in any irreversible commitment of the grizzly bear resource and should allow the species to flourish when its population is considered on a statewide scale. Some causes of grizzly mortality can be regulated or eliminated if necessary and the overall management program is designed to track the population and mortalities in a sustainable cost effective way. Likewise, habitat programs and access management actions can also be reversed or revised as needed.

The grizzly bear and other species are major components of our quality of life in Montana. This quality of life attracts new residents resulting in an expanding human population. Subdivisions, energy development, and other land development programs are slowly but steadily altering grizzly habitat. FWP is seeing some irretrievable commitment of resources to manage wildlife in the face of these changes as the department invests in habitat conservation efforts such as fee title purchase of quality habitats, attainment of conservation easements, and staff and equipment to manage nuisance bears.

Secondary and Cumulative Impacts

Successful implementation of this management plan does have some secondary impacts on other wildlife or habitat management programs, other wildlife species, and the public. Continued focus on habitat management, food storage, and conflict prevention actions as described in this plan can provide a positive secondary impact to black bear populations as black bear conservation and management issues are similar to grizzly bear issues. The careful management of road densities, off road vehicle use and seasonal area closures is beneficial to bears in addition to other sensitive species such as elk. In fact, road density standards as recommended have been in place for years and have allowed for expansion of the bear population while maintaining secure elk habitat. Reasonable limitations on subdivision or energy development are also beneficial to many of the wide ranging or migratory species. Increasingly smart development and recommendations as seen in the FWP subdivision recommendations (MFWP 2012) will maintain habitat for a diversity of species. Additionally, there is the potential that population levels of black bears could be somewhat reduced due to grizzly bear expansion into currently unoccupied habitats. Yet 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.

In addition to secondary positive impacts to black bears, grizzly bear management can have positive secondary impacts to terrestrial and aquatic life and habitats because habitat management for grizzlies limits human uses and disturbance of habitats for all species. Management to limit open road densities and new developments ensure there is protected habitat for a diversity of wildlife. The enforcement of attractant storage orders and rules ensures other animals such as black bears and mountain lions do not gain access and become nuisance animals and generally results in greater public awareness of the risks of feeding wildlife.

There may also be secondary positive economic benefits to Montana from a recovered and sustainable bear population. Many people visit and relocate to Montana because of our diverse and abundant wildlife resources. FWP's successful education and outreach programs have made it possible for people to live and recreate in grizzly country, in essence, adding to the value of many Montana properties. Yet while there are many benefits to expanded grizzly bear populations, there is no denying that there will be impacts to property owners and livestock producers due to conflicts with grizzly bears. Data from Defenders of Wildlife on livestock losses from 2002-2012 show $8,500 was paid to producers who lost sheep, cattle or poultry to grizzly bears within the Montana portion of the GYA. Not all losses are submitted for claims. Implementing the programs recommended in this document will minimize impacts through prevention, where possible, and adequate management when conflicts do occur.

Agencies that manage lands in southwestern Montana could see increased costs with expanding grizzly populations due to an increase in area requiring food storage, or other habitat management measures. Many of the areas that grizzlies could occupy in the near future however already have adequate habitat management.

A negative secondary impact of ongoing management of grizzly bears can be the cost of program implementation. These costs can limit the resources available to manage other species. There can also be negative secondary costs to individuals and communities. There can be financial burdens on the property owners and recreationists who live or recreate within grizzly country as

they deal with livestock loss, property damage or increased costs of certain activities (e.g., purchase of food storage containers.) Anyone living or visiting grizzly country must accept the costs and risk of grizzlies on the landscape. Depending on a recreationists experience and comfort level their access to quality recreational and wilderness activities could be limited by their choice not to recreate in areas occupied by grizzlies. 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 surprisingly low levels. When one considers all of the people and activities that currently occur in grizzly habitat, and how few injuries or deaths happen, it demonstrates this low level of risk. In addition, the programs outlined in this plan should allow for management and further minimization of the risks of living with grizzlies knowing that no environment is totally risk free for people.

Impacts to local and state tax base and tax revenues are both positive and negative. Wildlife viewing and appreciation can bring visitors to Montana but wildlife can also decrease profitability and tolerance of local agricultural businesses, particularly livestock operations. While livestock losses have been minimal in southwest Montana, averaging 5 depredations per year from 2002-2012, the number of losses could increase as bears move farther outside of the Recovery Zone into private agricultural lands.

Since there are overlapping agency jurisdictions (USFWS, USFS, NPS, DNRC, and BLM) and associated agency plans for resource and wildlife management within Montana, there are some cumulative impacts to grizzlies and the humans that live, work, and recreate in southwest Montana. With the implementation of this proposed grizzly bear management plan, ongoing management of the species will continue to seek a balance between the habitat needs of grizzlies and humans in the area. An expansion of the grizzly bear population in the future may impact future land management, agency travel plans or agency projects. Furthermore, a great presence of grizzlies in an area may impact land use decisions by county officials. What these changes may be in the future is difficult to predict at this time, however past management changes have reflected the changing federal status of grizzlies. Any future changes to state or federal resource plans would be subjected to public review through either MEPA or NEPA processes.

The proposed southwestern management plan's strategies are designed to work in harmony with the department's grizzly bear management plan for western Montana as grizzlies continue to move across western Montana. This will ensure consistency of acceptable actions for the management of the species across its range.

FWP's proposed management plan for grizzlies in southwestern Montana is just one of the many resource management plans that will assist in the protection of grizzly bear habitat and conservation of the species in the coming years.

FWP does not believe there are secondary or cumulative impacts of grizzly bear management to any of the following: water quality, quantity, and distribution; geology; soil quality, stability, and moisture; vegetation cover, quantity and quality; aesthetics; air quality; unique, endangered, fragile, or limited environmental resources; historical and archaeological sites; demands on environmental resources of land, water, air and energy; social structures and mores; cultural uniqueness and diversity; quantity and distribution of employment; distribution and density of

population and housing; demands for government services; industrial and commercial activity; locally adopted environmental plans and goals; and other appropriate social and economic circumstances.

Preparers, Agencies, or Individuals Who were Consulted or Contributed Towards Preparation of the Final EIS and the Public Involvement Process

FWP's Lauri Hanauska-Brown and Kevin Frey were the primary authors of this document with oversight by Howard Burt, Rebecca Cooper, Quentin Kujala, Ken McDonald, Pat Flowers, and Ray Mule. Many additional FWP staff persons reviewed and edited drafts of this document including Shawn Stewart, Justin Gude, Jeremiah Smith, and Stephanie Adams. FWP's Adam Messer, Dan Tyers with the USFS, Mark Haroldson and Frank van Manen with the IGBST, Dan Bjornlie with Wyoming Game and Fish, and Chris Servheen and Rebecca Shoemaker with the USFWS all provided editing and technical assistance throughout document preparation.

FWP received an invitation by members of the Center for Biological Diversity, Defenders of Wildlife, Endangered Species Coalition, Greater Yellowstone Coalition, Natural Resources Defense Council, and Sierra Club to meet and discuss formulation of this plan in March 2013. FWP honored this invitation and listened to the groups suggestions.

GLOSSARY

APHIS – Animal Plant and Health Inspection Service
ARM - Administrative Rules of Montana
BLM - Bureau of Land Management
BMU - Bear Management Unit
CEM - Cumulative Effects Model
CMA - Conservation Management Area
COY - Cubs of the Year
CS - Conservation Strategy
DLP - Defense of Life or Property
DNA - Deoxyribonucleic acid -- the molecule that encodes genetic information
DNRC - Department of Natural Resources and Conservation
DOT - Department of Transportation
EIS - Environmental Impact Statement
ESA - Endangered Species Act
FCOY - Females with Cubs of the Year
FWP - Montana Fish, Wildlife & Parks
GYA - Greater Yellowstone Area
IGBC - Interagency Grizzly Bear Committee
IGBST - Interagency Grizzly Bear Study Team
MCA - Montana Codes Annotated
MEPA - Montana Environmental Policy Act
MOA - Memorandum of Agreement
MOU - Memorandum of Understanding
NEPA - National Environmental Policy Act
PCA - Primary conservation area or the designated Recovery Zone plus a 10 mile buffer
PEIS - Programmatic Environmental Impact Statement
USFS - United States Forest Service
USFWS - United States Fish & Wildlife Service
WMA - Wildlife Management Area
WS – Wildlife Services
YNP - Yellowstone National Park

LITERATURE CITED

Bentz, B.J., J. Regniere, C.J. Fettig, E.M. Hansen, J.L. Hayes, J.A. Hicke, R.G. Kelsey, J.F. Negron, and S.J. Seybold. 2010. Climate change and bark beetles in the western United States and Canada: direct and indirect effects. Bioscience 60:602-613.

Bjornlie, D.D., D.J. Thompson, M.A. Haroldson, C.C. Schwartz, K.A. Gunther, S.L. Cain, D.B. Tyers, K.L. Frey, B.C. Aber. 2013. Methods to Estimate Distribution and Range Extent of Grizzly Bears in the Greater Yellowstone Ecosystem. Wildlife Society Bulletin, doi: 10.1002/wsb.368.

Blanchard, B., and R. Knight. 1990. Reactions of grizzly bears to wildfire in Yellowstone National Park, Wyoming. The Canadian Field Naturalist 104:592-594.

Cayan, D.R., S.A. Kammerdiener, M.D. Dettinger, J.M. Caprio, and D.H. Peterson. 2001. Changes in the onset of spring in the western United States. Bulletin of the American Meteorological Society 82:399-415.

Clevenger, T., J. Wierzchowaki, B. Hruszcz, and K. Gunson. 2002. GIS-generated, expert-based models for identifying wildlife habitat linkages and planning mitigation packages. Cons. Biol. 16:503-514.

Craighead, F.C., Jr., and J.J. Craighead. 1972. Grizzly bear prehibernation and denning activities as determined by radiotracking. Wildlife Monographs 32:1-35.

Duffy, P.B., R.W. Arritt, J. Coquard, W. Gutowski, J. Han, J. Iorio, J. Kim, L.-R. Leung, J. Roads, and E. Zeledon. 2006. Simulations of present and future climates in the western United States with four nested regional climate models. Journal of Climate 19:873-895.

Eberhardt, L.L. and R.R. Knight. 1996. How many grizzlies in Yellowstone? Journal of Wildlife Management 60: 416-421.

Fagre, D.B., D.L. Peterson, and A.E. Hessl. 2003. Taking the pulse of mountains: Ecosystem responses to climatic variability. Climatic Change 59:263-282.

Gunther, K.A., R. Shoemaker, K. Frey, M.A. Haroldson, S.L. Cain, and F.T. van Manen. In press. Grizzly bear foods in the Greater Yellowstone Ecosystem, 1891-2012. Ursus.

Gunther, K.A., R. Shoemaker, K. Frey, M.A. Haroldson, S.L. Cain, and F.T. van Manen. In review. Annotated List of Grizzly Bear Foods in the Greater Yellowstone Ecosystem, 1925–2012. Ursus.

Harris, R.B., G.C. White, C.C. Schwartz, and M.A. Haroldson. 2007. Population growth of Yellowstone grizzlies: uncertainty, correlation, and future monitoring. Ursus 18(2): 167-177.

Haroldson, M.A. 2008. Assessing trend and estimating population size from counts of unduplicated females. Pages 9-15 *in* C.C. Schwartz, M.A. Haroldson, and K. West, editors. Yellowstone grizzly bear investigations: annual report of the Interagency Grizzly Bear Study Team, 2007. Geological Survey, Bozeman, Montana, USA.

Haroldson, M.A., and K. Frey. 2008. Estimating sustainability of annual grizzly bear mortalities. Pages 24–27 *in* C.C. Schwartz, M.A. Haroldson, and K. West, editors. Yellowstone grizzly bear investigations: annual report of the Interagency Grizzly Bear Study Team, 2007. U.S. Geological Survey, Bozeman, Montana, USA.

Haroldson, M.A., M. Ternent, K. Gunther, and C.C. Schwartz. 2002. Grizzly bear denning chronology and movements in the Greater Yellowstone Ecosystem. Ursus 13:29-37.

Higgs, Megan D., William A. Link, Gary C. White, M.A. Haroldson, and D.D. Bjornlie. 2013. Insights Into the Latent Multinomial Model Through Mark-Resight Data on Female Grizzly Bears With Cubs-of-the-Year. Journal of Agricultural, Biological, and Environmental Statistics. doi: 10.1007/s13253-013-0148-8.

Interagency Grizzly Bear Committee. 1998. Task force report, Grizzly Bear/Motorized Access Management. 6 pp.

Interagency Grizzly Bear Study Team. 2006. Reassessing methods to estimate population and sustainable mortality limit for the Yellowstone grizzly bear workshop document supplement. U.S. Geological Survey, Northern Rocky Mountain Science Center, Bozeman, Montana, USA.

Interagency Grizzly Bear Study Team. 2009. Yellowstone grizzly bear mortality and conflict reduction report. Interagency Grizzly Bear Study Team, Northern Rocky Mountain Science Center, Montana State University, Bozeman, Montana. USA. 53 pp.

Interagency Grizzly Bear Study Team. 2012. Updating and evaluating approaches to estimate population size and sustainable mortality limits for grizzly bears in the Greater Yellowstone Ecosystem. U.S. Geological Survey, Northern Rocky Mountain Science Center, Bozeman, Montana, USA.

Kendall, K.C., J.B. Stetz, D.A. Roon, L.P. Waits, J.B. Boulanger, and D. Paetkau. 2008. Grizzly Bear Density in Glacier National Park, Montana. Journal of Wildlife Management . 72(8):1693-1705.

LeFranc, M.N., Jr., M.B. Moss, K.A. Patnode, and W.C. Sugg III, editors. 1987. Grizzly bear compendium. The National Wildlife Federation, Washington, D.C., USA.

Leung, L.R., Y. Qian, X. Bian, W.M. Washington, J. Han, and J.O. Roads. 2004. Mid-century ensemble regional climate change scenarios for the western United States. Climatic Change 62:75-113.

Mace, R., J.S. Waller, T. Manley, L.J. Lyon, and H. Zuuring. 1996. Relationships among grizzly bears, roads, and habitat in the Swan Mountains, Montana. Journal of Applied Ecology 33: 1305-1404.

McWethy, D. B., S.T. Gray, P.E. Higuera, J.S. Litell, G.T. Pederson, A.J. Ray, and C. Whitlock. 2010. Climate and terrestrial ecosystem change in the U.S. Rocky Mountains and Upper Columbia Basin: Historical and future perspectives for natural resource management. U.S. Department of the Interior, National Park Service Natural Resource Report NPS/GRYN/NRR–2010/260, Fort Collins, Colorado, USA.

Mincher, B.J. 2000. Issues affecting grizzly bear management in the Greater Yellowstone Ecosystem. 17 pp.

Montana Fish, Wildlife and Parks. 2011. Montana State Trails Plan. 186 pp. fwp.mt.gov/recreation/management/stateTrailsPlan.html.

Montana Fish, Wildlife and Parks. 2002. Grizzly bear management plan for southwestern Montana 2002-2012. Helena, Montana, USA.

Montana Fish, Wildlife and Parks. 2012. Fish and Wildlife Recommendations for Subdivision Development in Montana: A Working Document. Montana Fish, Wildlife & Parks, Helena, Montana. 174 pp.

Nitschke, C.R., and J.L. Innes. 2008. Climatic change and fire potential in south-central British Columbia, Canada. Global Change Biology 14:841-855.

Pederson, G.T., S.T. Gray, T. Ault, W. Marsh, D.B. Fagre, A.G. Bunn, C.A. Woodhouse, and L.J. Graumlich. 2011. Climatic controls on the snowmelt hydrology of the northern Rocky Mountains. Journal of Climate 24:1666-1687.

Proctor, M.F. 2003. Landscape use, dispersal, geneflow, and population fragmentation of grizzly bears (*Ursus arctos*) in southeast British Columbia, southwest Alberta, and the northwestern USA. Ph.D. Dissertation. University of Calgary.

Proctor, M.F., et al. 2012. Population Fragmentation and Inter-Ecosystem Movements of Grizzly Bears in Western Canada and the Northern United States. Wildlife Monographs. 180:1-46. doi: 10.1002/wmon.6.

Reynolds, P.E., H.V. Reynolds, and E.H. Follmann. 1986. Responses of grizzly bears to seismic surveys in northern Alaska. Pages 169-175 *in* Bears: their biology and management. Proceedings of the 6th International Conference on Bear Research and Management, Grand Canyon, AZ, USA.

Rodriguez, C., J. Naves, A. Fernandez-Gil, J.R. Obeso, and M. Delibes. 2007. Long-term trends in food habits of relict brown bear population in northern Spain: the influence of climate and local factors. Environmental Conservation 34:36-44.

Schwartz, C.C., M.A. Haroldson, K. Gunther, and D. Moody. 2002. Distribution of grizzly bears in the Greater Yellowstone Ecosystem, 1990-2000. Ursus 13:203-212.

Schwartz, C.C., S.D. Miller, and M.A. Haroldson. 2003. Grizzly/brown bear. Pages 556-586 *in* G. Feldhamer, B. Thompson, and J. Chapman, editors. Wild mammals of North America: biology, management, and conservation. Johns Hopkins University Press, Baltimore, Maryland, USA.

Schwartz, C.C., M.A. Haroldson, and S. Cherry. 2006. Reproductive performance of grizzly bears in the Greater Yellowstone Ecosystem, 1983-2002. Pages 18-24 *in* C.C. Schwartz, M.A. Harolson, G.C. White, R.B. Harris, S. Cherry, K.A. Keating, D. Moody, and C. Servheen, eds. Temporal, spatial, and environmental influences on the demographics of grizzly bears in the Greater Yellowstone Ecosystem. Wildlife Monographs 161.

Schwartz, C.C., M.A. Haroldson, S. Cherry, and K.A. Keating. 2008. Evaluation of rules to distinguish unique female grizzly bears with cubs in Yellowstone. Journal of Wildlife Management 72(2):543–554.

Schwartz C.C., P.H. Gude, L. Landenburger, M.A. Haroldson, S. Podruzny. 2012. Impacts of rural development on Yellowstone wildlife: linking grizzly bear (*Ursus arctos*) demographics with demographics with projected residential growth. Wildlife Biology 18(3):246-263.

Servheen, C., J. Waller, and P. Sandstrom. 2003. Identification and management of linkage zones for grizzly bears between the large blocks of public land in the Northern Rocky Mountains. U.S. Fish and Wildlife Service, University of Montana, Missoula. 87 pp.

Servheen, C. and M. Cross. 2010. Climate change impacts on grizzly bears and wolverines in Northern U.S. and Transboundary Rockies: Strategies for Conservation. Report on workshop held Sept. 13-15, 2010 in Fernie, British Columbia. 23 pp.

Stewart, I.T., D.R. Cayan, and M.D. Dettinger. 2004. Changes in snowmelt runoff timing in western North America under a 'business as usual' climate change scenario. Climatic Change 62:217-232.

U.S. Fish and Wildlife Service. 2002. Biological Opinion on greater Yellowstone ecosystem snowmobile use consultation. Helena, MT, USA.

U.S. Fish and Wildlife Service. 2003. Draft bear recovery plan. Missoula, Montana. 181 pp.

U.S. Fish and Wildlife Service. 2007. Grizzly Bear Recovery Plan Supplement: Revised demographic criteria for the Yellowstone Ecosystem. 72 FR 11377. Available at http://www.fws.gov/endangered/recovery/index.html.

U.S. Fish and Wildlife Service. *In Draft*. Supplement to the Demographic Recovery Criteria of the Greater Yellowstone Grizzly Bear in *draft* to be published in 2014,)

Van Daele, L.J., V.G. Barnes, and R.B. Smith. 1990. Denning characteristics of brown bears on Kodiak Island, Alaska. Pages 257-267 *in* Bears: their biology and management. Proceedings of the 8th International Conference on Bear Research and Management, Victoria, British Columbia, Canada.

Walther, G.R. 2003. Plants in a warmer world. Perspectives in Plant Ecology, Evolution and Systematics 6:169-185.

Walther, G.R., S. Berger, and M.T. Sykes. 2005. An ecological 'footprint' of climate change. Proceedings of the Royal Society B 272:1427-1432.

Walther, G.R., E. Post, P. Convey, A. Menzel, C. Parmesan, T.J.C. Beebee, J.M. Fromentin, O. Hoegh-Guldberg, and F. Bairlein. 2002. Ecological responses to recent climate change. Nature 416:389-395.

APPENDICES

APPENDIX A: Memorandum of Understanding between Montana Fish, Wildlife and Parks and US Department of Agriculture Animal and Plant Health Inspection Service Wildlife Services regarding cooperative wildlife damage control program for grizzly bears, gray wolves, black bears, and mountain lions in the state of Montana

APPENDIX B: Bee Bear Policy Guidelines for Black Bears

APPENDIX C: Memorandum of Agreement for cooperative law enforcement between the US Fish and Wildlife Service and Montana Fish, Wildlife and Parks

APPENDIX D: Summary of Public Comments

See FWP webpage for Appendices:
http://fwp.mt.gov/fishAndWildlife/management/grizzlyBear/grizEis.html

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

June 2006

GRIZZLY BEAR MANAGEMENT PLAN FOR WESTERN MONTANA

DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT 2006-2016

Prepared by:

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With input from the
Montana Grizzly Bear Working Groups
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Front Cover: Grizzly bear (*Ursus arctos*). Sketch drawn by Clint E. Chapman.

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Montana Stockgrowers
Montana Wilderness Association
Natural Resources Defense Council
Yaak Valley Forest Council
Plum Creek Timber

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Bureau of Indian Affairs
Flathead National Forest
Montana Department of Agriculture
US Fish and Wildlife Service
US Forest Service
USGS Biological Resources Division
Blackfeet Tribe
Confederated Salish & Kootenai Tribes

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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.

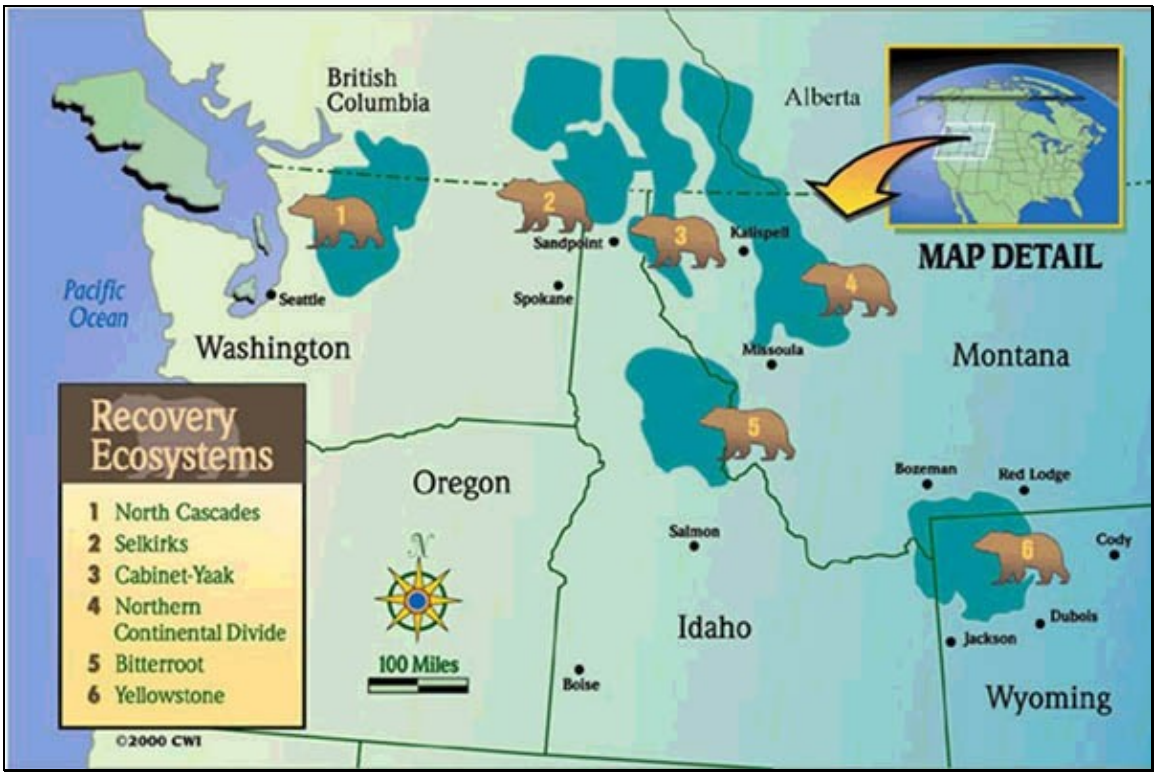

Figure 1. Grizzly bear recovery zones in the lower 48 states.

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.

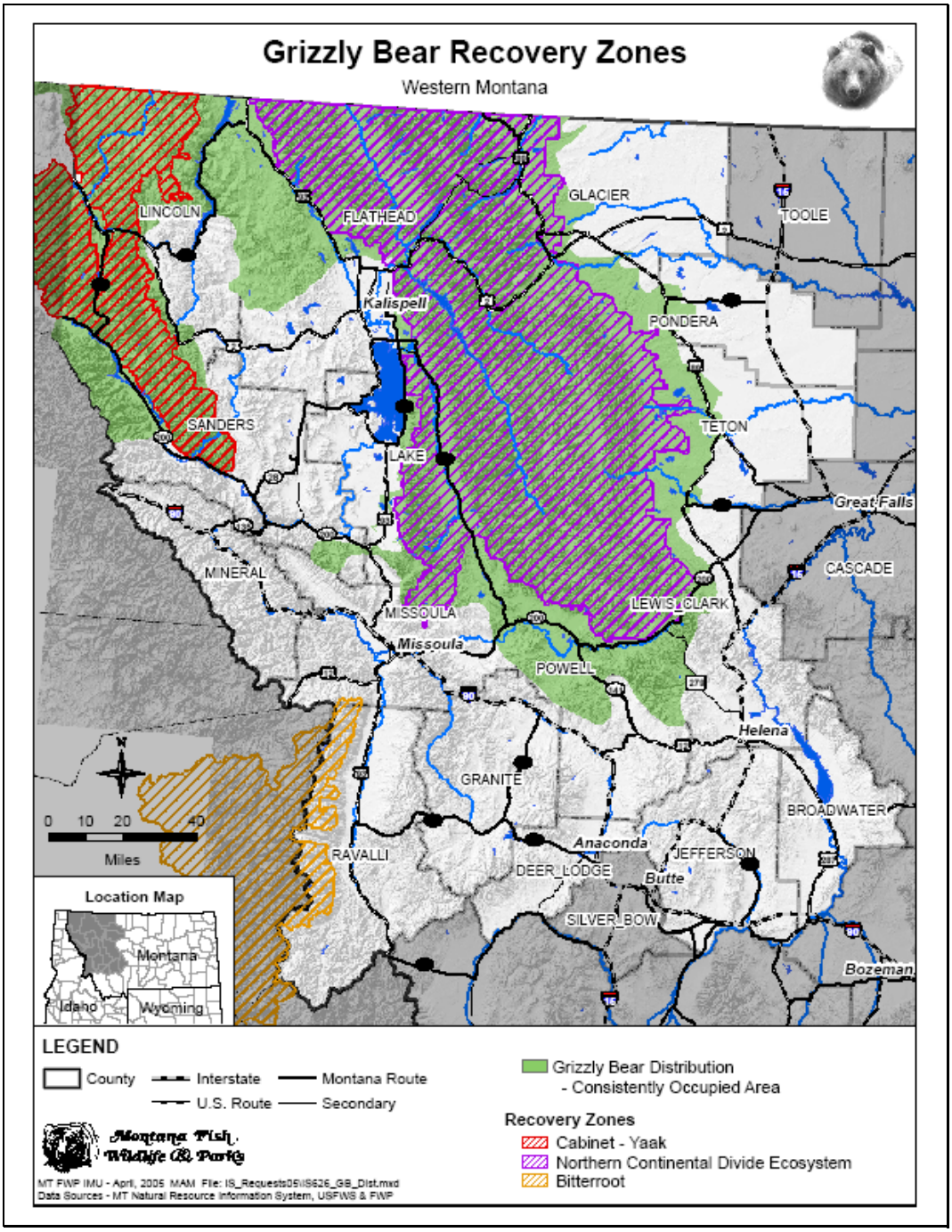

Figure 2. Grizzly bear recovery zones and distribution in western Montana.

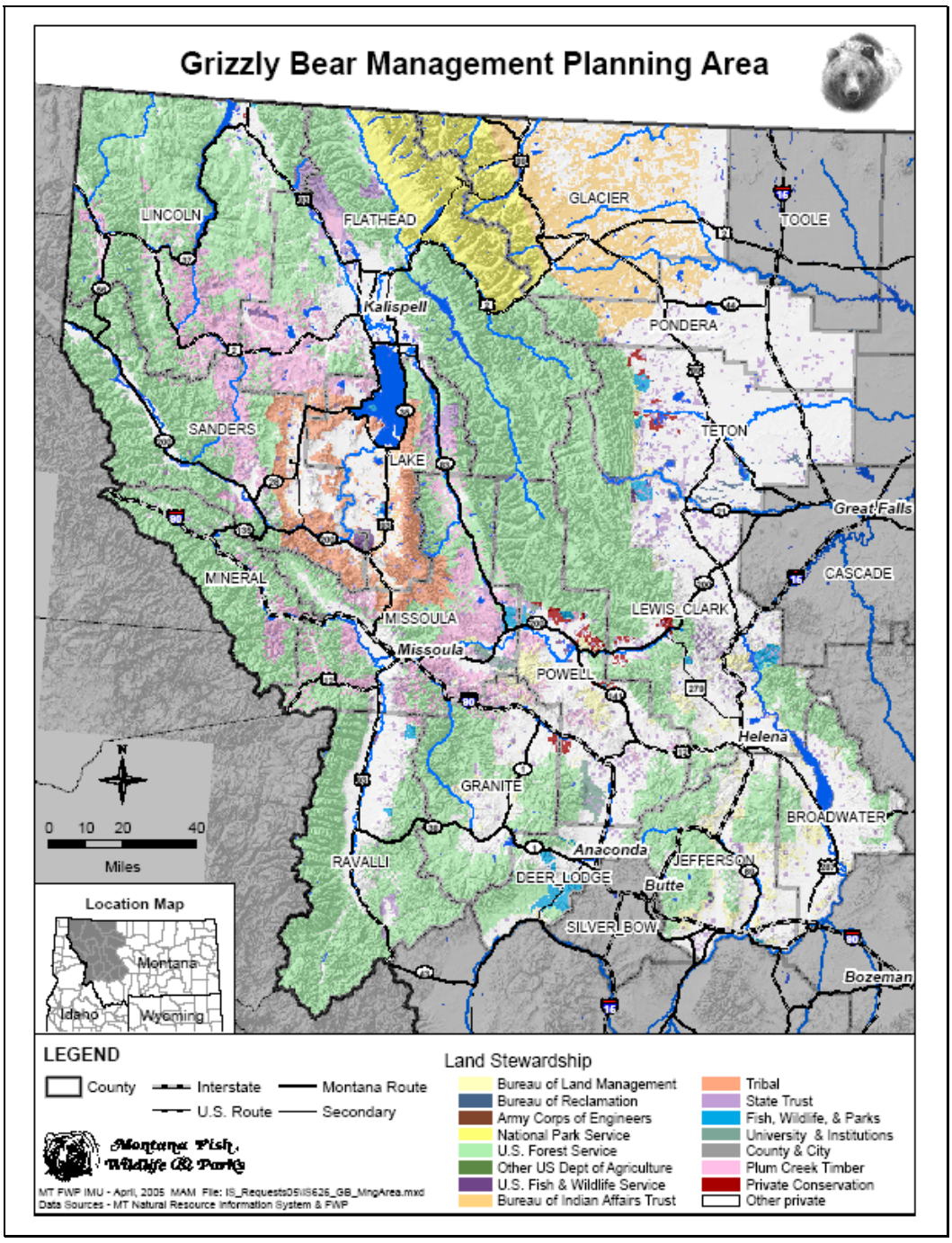

Figure 3. Grizzly bear management planning areas in western Montana.

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%.

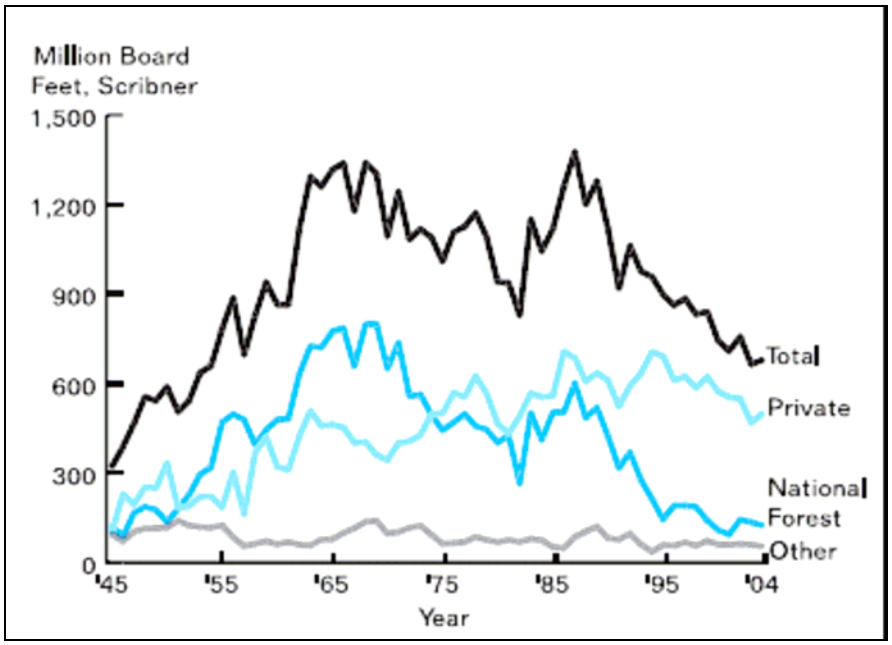

Figure 4: Montana timber harvested by ownership 1945-2004.
Source: Bureau of Business and Economic Research, The University of Montana-Missoula: USDA Forest Service Region One, Missoula, Montana.

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.

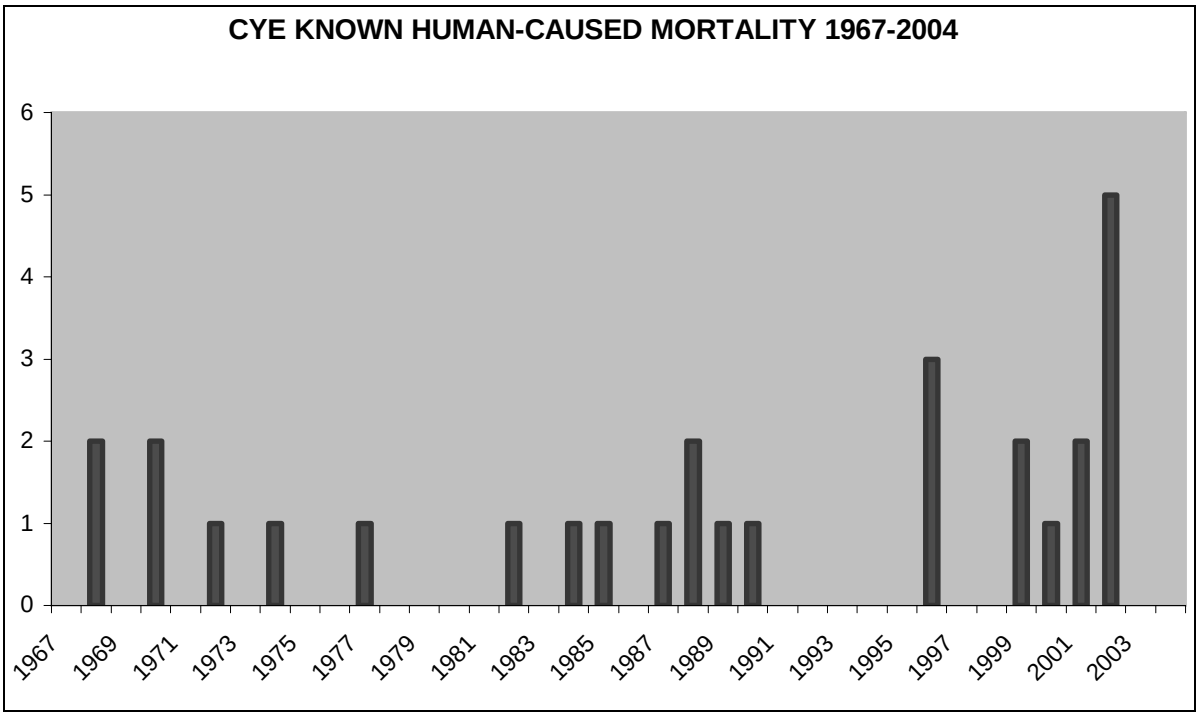

Figure 6. Known human-caused grizzly bear mortality in the Cabinet-Yaak Ecosystem 1967-2004.

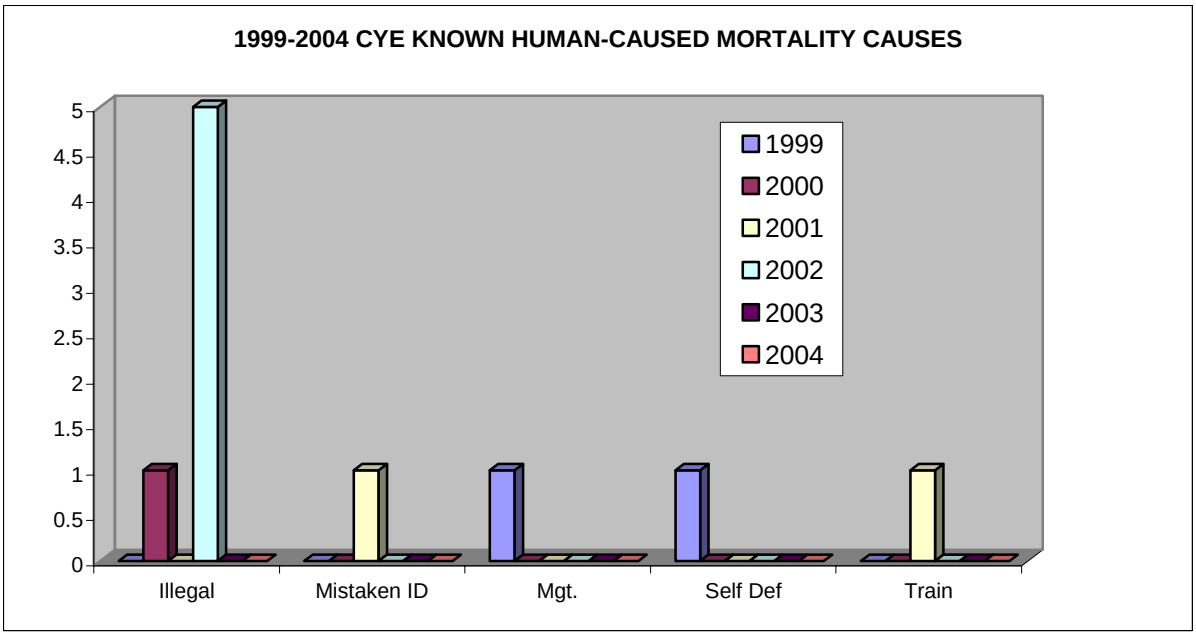

Figure 7. Known human-caused mortality causes in the Cabinet-Yaak Ecosystem 1999-2004

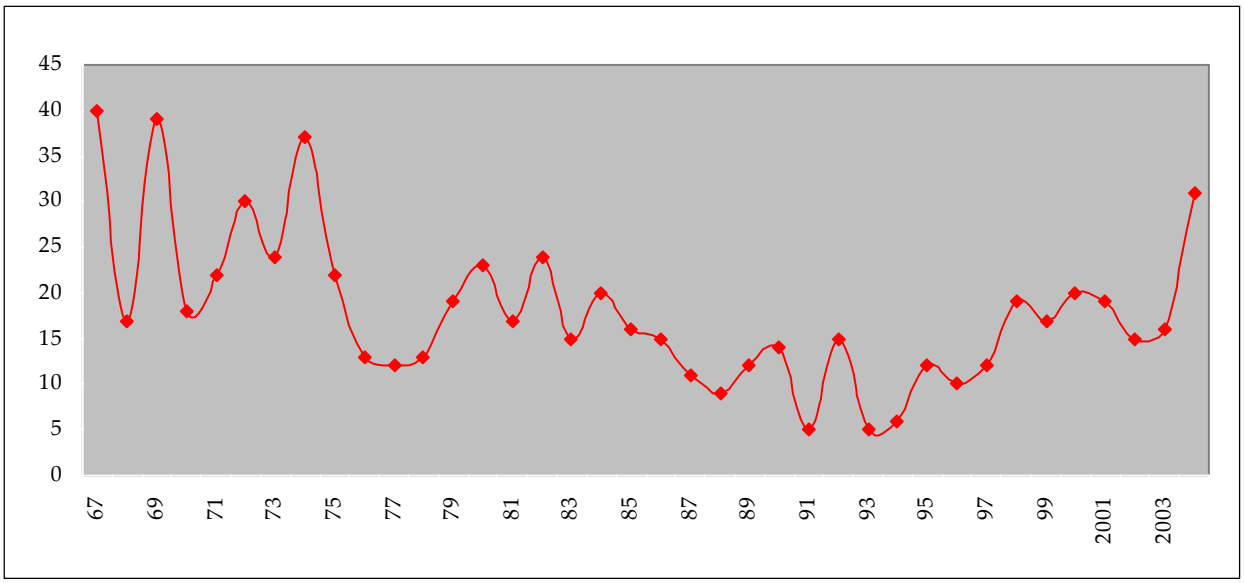

Figure 8. Known human-caused grizzly bear mortality in the Northern Continental Divide Ecosystem 1967 – 2004.

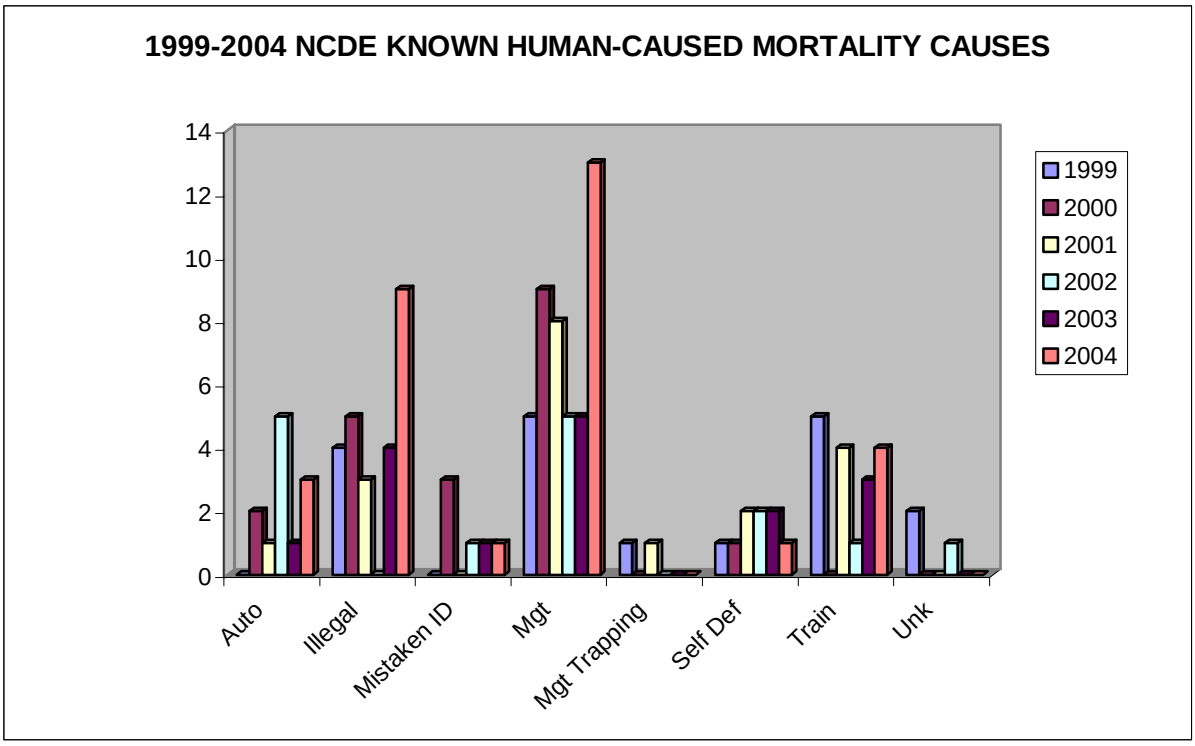

Figure 9. Known human-caused mortality causes in the Northern Continental Divide Ecosystem 1999-2004.

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.

LITERATURE USED TO ASSIST IN PREPARATION OF THIS PLAN

Administrative Rules of Montana (ARM) 36.11.431 – ARM 36.11.434. 2003. Threatened and endangered species – grizzly bear, grizzly bear Management on blocked lands, grizzly bear management on other western Montana lands, grizzly bear management on eastern Montana lands.

Albert, D. M., T. R. Bowzer and S. D. Miller. 2001. Effort and success of brown bear hunters in Alaska. *Wildlife Society Bulletin* 28: 501-508.

Aune, K., Stivers, T. and M. Madel. 1985. Rocky Mountain Front grizzly bear monitoring and investigation. Montana Department of Fish, Wildlife and Parks, Helena. 138 pp.

Bader, M. 2000. Spatial needs of grizzly bears in the U.S. Northern Rockies. Alliance for the Wild Rockies. Special Report No. 10. Missoula, Montana. 28 pp.

Bader, M. 2000. Distribution of grizzly bears in the U.S. Northern Rockies. *Northwest Science* 74: 325-334.

Berger, J., J.E. Swenson and I. Persson. 2001. Recolonizing carnivores and naïve prey: conservation lessons from Pleistocene extinctions. *Science* 291:1036-1039.

Blackfeet Indian Reservation. 1998. Draft bear management plan and guidelines for bear management on the Blackfeet Indian reservation, Montana.

Bob Marshall Wilderness Complex Interdisciplinary Team, J. J. Claar, Coordinator. 1993. Grizzly bear sanitation strategy, Northern Continental Divide Ecosystem, draft final report, to NCDE manager's subcommittee.

Bodurtha, T. 2004. Draft BNSF habitat conservation plan for grizzly bears. U.S. Fish and Wildlife Service, Kalispell, Montana.

Boyce, M. S. and J. S. Waller. 2003. Grizzly bears for the Bitterroot: predicting potential abundance and distribution. *Wildlife Society Bulletin* 31:670-683.

Bulte, E. H. and D. Rondeau. 2005. Why compensating wildlife damages may be bad for conservation. *Journal of Wildlife Management* 69:14-19.

Caughley, G. 1994. Directions in conservation biology. *Journal of Animal Ecology* 63:215-244.

Clevenger, A. P., B. Chumszyz and K. E. Gunson. 2001. Highway mitigation fencing reduces wildlife-vehicle collisions. *Wildlife Society Bulletin* 29:646-653.

Confederated Salish and Kootenai Tribes. 1981. Flathead Indian Reservation Grizzly Bear Management Plan, Flathead Indian Reservation, Montana.

Confederated Salish and Kootenai Tribes. 2000. Flathead Indian Reservation Forest Management Plan, Flathead Indian Reservation, Montana.

Confederated Salish and Kootenai Tribes. Mission Mountain Tribal Wilderness Management Plan, Flathead Indian Reservation, Montana.

Confederated Salish and Kootenai Tribes. Mission Mountain Buffer Management Plan, Flathead Indian Reservation, Montana.

Conover, M. R. 2001. Effect of hunting and trapping on wildlife damage. *Wildlife Society Bulletin* 29:521-532.

Conover, M.R. and D. V. Conover. 2001. For whom do we manage wildlife: the resource, society, or future generations. *Wildlife Society Bulletin* 29: 675-679.

Craighead, F.L., M.E. Gilpin and E.R. Vyse. 1999. Genetic considerations for carnivore conservation in the Greater Yellowstone Ecosystem. Pages 285-321 in T.W. Clark, A.P. Curlee, S.C. Minta, and P.M. Kareiva, editors, *Carnivores in Ecosystems: the Yellowstone Experience*. Yale University Press.

Craighead, L. 2000. Regional corridors. A comparison of the Walker-Craighead reserve model with the Merrill-Mattson CERI reserve model. Craighead Environmental Research Institute. Bozeman, Montana.

Curtin, C. G. 2002. Integration of science and community-based conservation in the Mexico/U.S. borderlands. *Conservation Biology* 16: 880-886.

Davradou, M. and G. Namkoong. 2001. Science, ethical arguments, and management in the preservation of land for grizzly bear conservation. *Conservation Biology*, 15: 570-577.

Dobson, A. et al. 1999. Corridors: reconnecting fragmented landscapes. Pages 129-170 in M.E. Soule and J. Terborgh (eds) *Continental Conservation: Scientific Foundations of Regional Reserve Networks*. Island Press.

Dood, A. R., R. B. Brannon and R. D. Mace. 1986. Final programmatic environmental impact statement, the grizzly bear in northwestern Montana. Montana Department of Fish, Wildlife and Parks. 287 pp.

Dood, A. R. and H. I. Pac. 1993. Five year update of the programmatic environmental impact statement, the grizzly bear in northwestern Montana 1986-1990. Montana Department of Fish, Wildlife and Parks. 228 pp.

Edwards, V. 2003. Northern Continental Divide Ecosystem front country survey of attractant sites, 2002-2003. Brown Bear Resources, Inc., Missoula, Montana.

Edwards, V. 2003. Let's talk trash: the maintenance and use of bear-resistant dumpsters in Lincoln County, Montana. University of Montana, Missoula, Montana.

Frye, S. J. and L. F. Marnell. 2004. Bear management plan, Glacier National Park. Glacier National Park, Montana.

Garsheilis, D. L., M. L. Gibeau and S. Herrero. 2005. Grizzly bear demographics in and around Banff National Park and Kananaskis Country, Alberta. *Journal of Wildlife Management* 69:277-297.

Guide Outfitter Association of British Columbia. Grizzly bears in British Columbia: the real story. 2000. Guide Outfitter Association of British Columbia. 17 pp.

Gunther, K.A., et al. 1999. Grizzly bear-human conflicts, confrontations, and management actions in the Yellowstone Ecosystem. Interagency Grizzly Bear Committee. 62 pp.

Harris, R. B., W. A. Wall and F. W. Allendorf. 2002. Genetic consequences of hunting: what do we know and what should we do? *Wildlife Society Bulletin* 30: 634-643.

Henry, G. V. and Muchash. 2000. Red wolf reintroduction lessons regarding species restoration. Red wolf management series. Technical Report no. 12. 17 pp.

Herrero, S, T. Smith, T. D. DeBruyn, K. Gunter and C. A. Matt. 2005. From the Field: brown bear habituation to people – safety, risks, and benefits. *Wildlife Society Bulletin* 33:

Hood, G. A. and K. L. Parker. 2001. Impact of human activities on grizzly bear habitat in Jasper National Park. *Wildlife Society Bulletin* 28: 624-638.

Hunt, C. Date Unknown. Bear shepherding guidelines for safe and effective treatment of human-bear conflicts. Wind River Bear Institute, Heber City, Utah.

Infield, M. 2001. Cultural Values: a forgotten strategy for building community support for protected areas in Africa. *Conservation Biology* 15: 800-802.

Interagency Grizzly Bear Committee. 1987. Grizzly bear compendium. Bozeman, Montana.

Interagency Grizzly Bear Committee. 1986. Interagency grizzly bear guidelines. Missoula, Montana. 100 pp.

Interagency Grizzly Bear Committee. 1998. Interagency grizzly bear committee taskforce report: grizzly bear motorized/access management. Missoula, Montana. 8 pp.

Interagency Rocky Mountain Front Wildlife Monitoring and Evaluation Program. 1987. Management guidelines for selected species. Rocky Mountain Front studies.

Johnson, S. 2000. Building a species recovery program on trust. *Conservation biology in Practice*. Pages 35-37.

Kasworm, W. and T. Manley. 1988. Grizzly bear and black bear ecology in the Cabinet Mountains of northwest Montana. Montana Department of Fish, Wildlife and Parks, Helena.

Karworm, W., Thier, T. and C. Servheen. 1998. Grizzly bear recovery efforts in the Cabinet/Yaak ecosystem. *Ursus* 10: 147-153.

Kasworm, W. and C. Servheen. 2004. Habitat fragmentation effects on grizzly bear and black bear movement and connectivity in the Kootenai River Valley. U.S. Fish and Wildlife Service, Libby, Montana.

Kasworm, W., Carriles, H., Radandt, T. and C. Servheen. 2005. Cabinet-Yaak grizzly bear recovery area 2004 research and monitoring progress report. U.S. Fish and Wildlife Service, Missoula, Montana. 69 pp.

Keegan, C. E. and T.A. Morgan. 2005. Montana's timber and forest products industry situation, 2004. The University of Montana-Missoula, Bureau of Business and Economic Research, Missoula, Montana. 10 pp.

Lacy, R. C. 1997. Importance of genetic variation to the viability of mammalian populations. *Journal of Mammalogy* 78: 320-335.

Lande, R. 1993. Risks of population extinction from demographic and environmental stochasticity and random catastrophes. *The American Naturalist* 142: 911-927.

Lenton, S., E. John and J. Perez Del Val. 2000. A single non-parametric GIS model for predicting species distribution: endemic birds in Bioko Island West Africa. *Biodiversity and Conservation* 9:869-885.

Linnell, J., J. Swenson and R. Andersen. 2000. Conservation of biodiversity in Scandinavian boreal forests: large carnivores as flagships, umbrellas, indicators, or keystones? Biodiversity and Conservation 9:857-868.

Mace, R. D. and J. S. Waller. 1998. Demography and population trend of grizzly bears in the Swan Mountains, Montana. *Conservation Biology* 12: 1005-1016.

McLellan, B. 2004. Rates and causes of grizzly bear mortality in the United States and Canadian portions of the Flathead drainage, British Colombia. Forest Sciences Research Branch, Revelstoke, British Columbia, Canada.

McLellen, B. N. 2005. Sexually selected infanticide in grizzly bears: the effects of hunting on cub survival. *Ursus* 16: 141-156.

McLellan, B. N and F. W. Hovey. 2001. Habitats selected by grizzly bears in a multiple use landscape. *Journal of Wildlife Management* 65: 92-99.

McLellen, B. N. and F. W. Hovey. 2001. Natal Dispersal of grizzly bears. *Canadian Journal of Zoology* 79: 838-844.

Meadow, R., R. P. Reading, M. Phillips, M. Mehringer and B. J. Miller. 2005. The influence of persuasive arguments on public attitudes towards a proposed wolf restoration in the southern Rockies. *Wildlife Society Bulletin* 33(1).

Messmer, T.A., D. Reiter and B.C. West. 2001. Enhancing wildlife sciences' linkage to public policy: lessons from the predator-control pendulum. *Wildlife Society Bulletin* 29: 1253-1259.

Miller, S. D. 2001. Rates of brown bear, *Ursus arctos*, cub survivorship in hunted and unhunted portions of Alaska (in press).

Miller, S.D., R. A. Sellers and J. A. Keay. 2003. Effects of hunting on brown bear cub survival and litter size in Alaska. *Ursus* 14: 130-152.

Miller, S. D., G. C. White, R. A. Sellers, H. V. Reynolds, J. W. Schoen, K. Titus, V. G. Barnes, Jr., R. B. Smith, R. R. Nelson, W. B. Ballard and C. C. Schwartz. 1997. Brown and black bear density estimation in Alaska using radiotelemetry and replicated mark-resight techniques. *Wildlife Monographs*. 133.

Miller, S. D. 1990. Population management of bears in North America. *International Conference on Bear Research and Management* 8: 357-373.

Miller, S. D. 1993. Brown bears in Alaska: a statewide management report. Alaska Department of Fish and Game. *Wildlife Technical Bulletin 11.* 40 pp.

Miller, S. D. Impact of increased bear hunting on survivorship of young bears. *Wildlife Society Bulletin* 18: 462-467.

Miller, S.D. 1990. Denning ecology of brown bears in south-central Alaska and comparisons with a sympatric black bear population. *International Conference on Bear Research and Management*. 8: 279-298.

Mincher, B. J. 2000. Issues affecting grizzly bear management in the Greater Yellowstone Ecosystem. Unpublished Report. 17 pp.

Montage, J. M., M. E. Paterson and B. Sutton (date unknown). Political and social viability of predator compensation programs in the west, final project report. Wildlife Biology Program, School of Forestry, University of Montana, Missoula, Montana.

"Montana," Microsoft® Encarta® Online Encyclopedia 2005. http://encarta.msn.com © 1997-2005 Microsoft Corporation. Accessed March 2 2006..

Northern Continental Divide Ecosystem Monitoring Team. 2004. Draft Interagency Population and Habitat Monitoring Plan for Grizzly Bears in the Northern Continental Divide Ecosystem. 37 pp.

Noss, R. F., H. B. Quigley, M. G. Hornocker, T. Merrill and P.C. Paquet. 1996. Conservation biology and carnivore conservation in the Rocky Mountains. *Conservation Biology* 10: 939-963.

Olson, G. and I. Trowbridge. 1990. Blackleaf wildlife management area management plan. Montana Department of Fish, Wildlife and Parks.

Pac, H. I., and A. R. Dood. Five-year update of the programmatic environmental impact statement, the grizzly bear in northwestern Montana, 1991-1995. Montana Department of Fish, Wildlife and Parks. 53 pp.

Peek, J., J. Beecham, D. Garshelis, F. Messier, S. Miller and D. Strickland. 2003. Management of grizzly bears in British Columbia: a review by an independent scientific panel. Minister for Water, Land and Air Protection, Government of British Columbia, Victoria, British Columbia, Canada.

Pelletier, K. (date unknown). Managing private land in Swam Valley linkage zones for grizzly bears and other wildlife. Swan Valley Linkage Zone Working Group.

Primm, S. and S. M. Wilson. 2004. Re-connecting grizzly bear populations: prospects for participatory projects. *Ursus* 15 Workshop Supplement: 104-114.

Proctor, M. F., McLellen, B. N., Strobeck, C. and R. M. R. Barclay. In press. Genetic analysis reveals demographic fragmentation of grizzly bears yielding vulnerably small populations.

Riley, S. J., D. J. Decker, L. H. Carpenter, J. F. Organ, W. F. Siemer, G. F. Mattfeld and G. Parsons. 2002. The essence of wildlife management. *Wildlife Society Bulletin* 30: 585-593.

Schwartz, C., S. Miller and M. Haroldson. 2001. Grizzly/brown bear. In: *Wild Mammals of North America* (in prep.)

Schwartzman, S., A. Moreira and D. Nepstad. 2000. Rethinking tropical forest conservation: perils in parks. *Conservation Biology* 14: 1351-1357.

Servheen, C, J. S. Waller and P. Sandstrom. 2001. Identification and management of linkage zones for grizzly bears between the large blocks of public land in the Northern Rocky Mountains. U.S. Fish and Wildlife Service. 87 pp.

Sowka, P. 2005. Living with predators resource guide series – predator behavior modifications for professionals. Second Edition. Produced by the Living with Wildlife Foundation in cooperation with Montana Department of Fish, Wildlife and Parks, living with Predators Project. Swan Valley, Montana.

Sowka, P. 2005. Living with predators resource guide series – recreating in bear, wolf and mountain lion country. Second Edition. Produced by the Living with Wildlife Foundation in cooperation with Montana Department of Fish, Wildlife and Parks, living with Predators Project. Swan Valley, Montana.

Sowka, P. 2005. Living with predators resource guide series – techniques and refuse management options for residential areas, campgrounds and group-use facilities. Second Edition. Produced by the Living with Wildlife Foundation in cooperation with Montana Department of Fish, Wildlife and Parks, living with Predators Project. Swan Valley, Montana.

Spanski, G. T. 2001. Inventory of mines and mining related facilities in Idaho and western Montana active from 1997 through 2000. Preliminary Open File Report 01-129 for U.S. Department of Interior and U.S. Geological Survey. 14 pp.

State of Montana. Code Annotated 87-3-130. Taking of wildlife to protect persons or livestock.

State of Montana. Montana Department of Fish, Wildlife and Parks. 2002. Grizzly bear management plan for southwestern Montana 2002-2012. Montana Department of Fish, Wildlife and Parks, Helena, Montana.

State of Montana. Montana Department of Fish, Wildlife and Parks, Region Four. 1988. Rocky Mountain Front Grizzly Bear Management Program.

State of Montana. Montana Department of Fish, Wildlife and Parks, Region Two. 2004. Living with Predators Project.

State of Montana. Administrative Rules of Montana. Section 12.9 103 grizzly bear policy.

State of Montana. Administrative Rules of Montana. Section 36.11.431 Threatened and endangered species – grizzly bear.

State of Montana. Administrative Rules of Montana. Section 36.11.432 Grizzly bear management on blocked lands.

State of Montana. Administrative Rules of Montana. Section 36.11.432 Department of Natural Resources and Conservation.

State of Montana. Administrative Rules of Montana. Section 36.11.433 grizzly bear management on other western Montana lands.

State of Montana. Administrative Rules of Montana. Section 36.11.434 grizzly bear management on eastern Montana lands.

Stritthold, J.R. and D. A. Dellasala. 2001. Importance of roadless areas in biodiversity conservation in forested ecosystems: case study of the Klamath-Siskiyou Ecoregion of the United States. *Conservation Biology* 15: 1742-1754.

Summerfield, B., W. Johnson and D. Roberts. 2004. Trends in road development and access management in the Cabinet-Yaak and Selkirk grizzly bear recovery zones. *Ursus* 15 Workshop Supplement: 115-122.

Teddy Roosevelt Conservation Alliance. Square Deal Initiative #1. The Square Dealer Vol. 1, Issue 2.

Thompson, S, Jonkel, J. and P. Sowka. 2005. Living with predators resource guide series – practical fencing resource guide: controlling predators. Produced by the Living with Wildlife Foundation in cooperation with Montana Department of Fish, Wildlife and Parks, Living with Predators Project. Swan Valley, Montana.

Treves, A. and K. U. Karanth. 2003. Human-carnivore conflict and perspectives on carnivore management worldwide. *Conservation Biology* 17: 1491-1499.

U. S. Forest Service. 1994. Food storage special order LC00-18, occupancy and use restrictions, Northern Continental Divide Ecosystem, Flathead, Lewis and Clark, Lolo, and Helena National Forests. USDA Forest Service.

U. S. Forest Service. 1986. Bitterroot National Forest Land Resource Management Plan. Helena National Forest, Montana.

U. S. Forest Service. 1986. Flathead National Forest Land Resource Management Plan. Flathead National Forest, Montana.

U. S. Forest Service. 1986. Helena Forest Land Resource Management Plan. Helena National Forest, Montana.

U. S. Forest Service. 1986. Lewis and Clark National Forest Land Resource Management Plan. Lewis and Clark National Forest, Montana.

U. S. Forest Service. 1986. Lolo Forest Land Resource Management Plan. Lolo National Forest, Montana.

U. S. Forest Service. 1987. Kootenai National Forest Land Resource Management Plan. Kootenai National Forest, Montana.

U. S. Forest Service. 1995. Forest plan amendment #19, allowable sale quantity and objectives and standards for grizzly bear habitat management, decision notice. U.S. Forest Service, Flathead National Forest, Kalispell, Montana.

U. S. Forest Service. 1995. Forest plan amendment #19, allowable sale quantity and objectives and standards for grizzly bear habitat management, amended environmental assessment. U. S. Forest Service, Flathead National Forest, Kalispell, Montana.

U. S. Forest Service. 2002. Biological opinion on the effects of the Spotted Bear River trailheads project on grizzly bears. Helena, Montana.

U.S. Forest Service. 2002. Final environmental impact statement for access management within the Selkirk and Cabinet-Yaak grizzly bear recovery zones. U.S. Forest Service, Libby Montana.

U. S. Forest Service. 2004. 2003 LRMP amendment 19 monitoring report. U. S. Forest Service, Flathead National Forest, Kalispell, Montana.

U. S. Fish and Wildlife Service. 1993. Grizzly bear Recovery Plan. Missoula, Montana. 181pp.

U. S. Fish and Wildlife Service. 1995. Biological opinion and amendment 19 to the Flathead National Forest plan. Helena, Montana.

U. S. Fish and Wildlife Service. 2003. Identification and management of linkage zones for grizzly bears between large blocks of public land in the northern Rocky Mountains by C. Servheen, J. S. Waller and P. Sandstrom. Missoula, Montana. 87 pp.

U. S. Fish and Wildlife Service. 2004. Biological Opinion for the Kootenai, Idaho Panhandle and Lolo National Forest Land and Resource Management Plans Amendment for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones. U.S. Fish and Wildlife Service, Upper Columbia Fish and Wildlife Office, Spokane, Washington and Montana Field Office, Kalispell, Montana. 163 pp.

U. S. Fish and Wildlife Service. 2005. Montana DNRC Forested Trust Land Habitat Conservation Plan, Draft Grizzly Bear Conservation Strategy. U. S. Fish and Wildlife Service and Montana Department of Natural Resources and Conservation Lands, Montana.

Wakkinen, W. L. and W. F. Kasworm. 2004. Demographics and population trends of grizzly bears in the Cabinet-Yaak and Selkirk ecosystems of British Columbia, Idaho, Montana, and Washington. *Ursus* 15 Workshop Supplement: 65-75.

Waller, R. and L. Craighead. 1997. Analyzing wildlife movement corridors in Montana using GIS. Proceedings of the International ESRI Users Conference.

Wilson, S. M. 2004. What's behind grizzly bear conflicts on Rocky Mountain Front ranges. *Wild Guardian*: winter 2004.

Willcox, L. and D. Ellenburger. 2000. The bear essentials for recovery. An alternative strategy for long-term restoration of Yellowstone's great bears. Sierra Club grizzly bear ecosystems project. 25 pp.

Yaffee, S. L. and J. M. Wondolleck. 2000. Making collaboration work! *Conservation Biologist in Practice* 17-25.