CHAPTER V: GRIZZLY BEAR

A. Status of the Species

1. Listing History

On July 28, 1975, the grizzly bear was listed as threatened in the conterminous U.S. (Service 1975). In 1991, the Service received petitions to reclassify the five existing grizzly bear populations: 1) the Yellowstone (YRZ); 2) the Northern Continental Divide (NCDRZ); 3) the Cabinet-Yaak (CYRZ); 4) the Selkirk (SRZ); 5) the North Cascades (NCRZ), from threatened to endangered. On April 20, 1992, the Service issued a "not warranted for reclassification" finding for the YRZ and NCDRZ populations (Service 1992). On February 12, 1993 (Service 1993a), the Service found that reclassification of grizzly bears in the CYRZ from threatened to endangered was warranted but precluded by work on higher priority species, but determined that such reclassification was not warranted for the grizzly bear population in the SRZ. On May 17, 1999 (Service 1999), the Service found that reclassification of grizzly bears in the SRZ from threatened to endangered was warranted but precluded by work on higher priority species. Also, in its May 17, 1999 finding, the Service determined that preliminary information suggests that the CYRZ and SRZ grizzly bear populations may be connected through Canada. Therefore, the Service will consider formally recognizing a distinct population segment that would encompass both of these ecosystems. Until a final determination is made on a distinct population segment, the Service still considers the ecosystems to be separate. On March 29, 2007, the Service designated the Greater Yellowstone Area (GYA) population of grizzly bears, which includes the YRZ, as a distinct population segment (DPS), and removed the GYA DPS from the List of Threatened and Endangered Wildlife under the Act. The delisting became effective on April 30, 2007 (Service 2007).

2. Description of the Species

The grizzly bear is one of two subspecies of the brown bear (*Ursus arctos*) which occupy North America. Coloration varies from light brown to almost black, with guard hairs often paled at the tips. Grizzly bears are generally larger than black bears (*Ursus americanus*) and can be distinguished from them by longer, curved claws, humped shoulders, and a more concave face. In the lower 48 States, male grizzlies average 400 to 600 pounds and female grizzlies average 250 to 350 pounds. Adult grizzlies stand 3.5 to 4.5 feet at the hump when on all fours, and can exceed 8 feet in height when standing on their hind legs. Grizzly bears are a wide-ranging species with individualistic behavior, although there is little evidence that they are territorial. Home range sizes vary, and the home ranges of adult bears frequently overlap. Most areas currently inhabited by the species are represented by contiguous, relatively undisturbed mountainous habitat exhibiting high topographic and vegetative diversity. Availability of spring habitat is a concern throughout the current range of the species. A more complete discussion of the biology and ecology of this species may be found in the 1993 Grizzly Bear Recovery Plan (Recovery Plan) (Service 1993b).

3. Life History and Habitat Requirements

The following information is abridged from the Recovery Plan (Service1993b). Although relatively long-lived (20-25 years in the wild), the grizzly bear has a low reproductive rate due to the late age of first reproduction (4-7 years), small litter size (two cubs), long intervals between litters (three years), and limited cub survival (less than 50 percent). Grizzly bears are omnivorous, opportunistic feeders that require foods rich in protein or carbohydrates in excess of maintenance requirements in order to survive seasonal pre-and post-denning requirements. Grizzly bears are homeo-hypothermic hibernators. Their body temperature drops no more than 5 degrees Celsius (approximately 10 degrees Fahrenheit) during winter when deep snow, low food availability, and low ambient air temperatures appear to make winter sleep essential to grizzly bears' survival (Craighead and Craighead 1972a, 1972b). Grizzly bears excavate dens and require environments well-covered with a blanket of snow for up to 5 months, generally beginning in fall (September to November) and extending until spring (March to April) (Craighead and Craighead 1972b; Pearson 1975).

The search for energy-rich food appears to be a driving force in grizzly bear behavior, habitat selection and intra/inter-specific interactions. Grizzly bears historically used a wide variety of habitats across North America, from open to forested, temperate through alpine and arctic habitats, once occurring as far south as Mexico. They are highly dependent upon learned food locations within their home ranges. Adequate nutritional quality and quantity are important factors for successful reproduction. Diverse structural stages that support wide varieties of nourishing plants and animals are necessary for meeting the high energy demands of these large animals. Grizzly bears seek vegetation, tuber, or fruits as they develop and become available, concentrated food sources including carrion, live prey (fish, mammals, insects), and are easily attracted to human food sources including gardens, grain, compost, bird seed, livestock, hunter gut piles, bait, and garbage. Bears that lose their natural fear and avoidance of humans, usually as a result of food rewards, become habituated, and may become food-conditioned. Grizzly bears will defend food and have been known to charge when surprised. Both habituation and food conditioning increase chances of human-caused grizzly bear mortality as a result of real or perceived threats to human safety or property. Nuisance grizzly bear mortalities can be a result of legal management actions, defense of human life, or illegal killing.

Adult grizzly bears are individualistic and normally solitary, with the exceptions of females with cubs and during short breeding relationships. They will tolerate other grizzly bears at closer distances when food sources are concentrated, and siblings may associate for several years following weaning (Murie 1944, 1962; Jonkel and Cowan 1971; Egbert and Stokes 1976; Glenn et al. 1976; Herrero 1978). Across their range, home range sizes vary from about 50 square miles or more for females to several hundred square miles for males, and overlap of home ranges is common. Grizzly bears may have one of the lowest reproductive rates among terrestrial mammals, resulting primarily from the late age at first reproduction, small average litter size, and the long interval between litters. Mating occurs from late May through mid-July. Females in estrus will accept more than one adult male (Hornocker 1962), and can produce cubs from different fathers the same year (Craighead et al. 1995). Age of first reproduction and litter size may be nutritionally related (Herrero 1978; Russell et al. 1978). The average age at first reproduction in the lower 48 States for females is 5.5 years, and litter size ranges from 1 to 4

cubs that stay with the mother up to 2 to 3 years. Males may reach physiological reproductive age at 4.5, but may not be behaviorally reproductive due to other dominant males preventing mating.

Home ranges of collared grizzly bears overlapped extensively in the CYE on a yearly and lifetime basis (Kasworm et al. 2005). Bears typically utilized the same space at different times. This phenomenon was especially true of female grizzly bears and their female offspring. Male home ranges overlap those of several females to increase breeding potential, but males and females consort only during the brief courtship and breeding period. Adult male home ranges also overlap, but males seldom use the same area at the same time, to avoid conflict.

Natural mortality is known to occur from intra-specific predation, but the degree to which this occurs in populations is not known. Parasites and disease do not appear to be a significant cause of natural mortality (Jonkel and Cowan 1971; Kistchinskii 1972; Mundy and Flook 1973; Rogers and Rogers 1976). As animals highly dependent upon learned habitat, displacement into unknown territory (such as subadult dispersal) may lead to submarginal nutrition, reduced reproduction or greater exposure to adult predatory bears or human food sources (which can lead to human-caused mortality). Starvation and loss in dens during food shortages have not been documented as a major mortality factor. Natural mortality is difficult to document or quantify in rare, relatively elusive animals such as grizzly bears.

Human-caused mortality has been slightly better quantified; recent models speculate that reported mortality may be only 50 percent of actual mortality (McLellen et al. 1999). Between 1800 and 1975, grizzly populations in the lower 48 states declined drastically. Fur trapping, mining, ranching, and farming pushed westward, altering habitat and resulting in the direct killing of grizzly bears. Grizzly bears historically were targeted in predator control programs in the 1930s. Predator control was probably responsible for extirpation in many states that no longer support grizzlies. The legal grizzly bear hunting season in Montana was closed in 1991. More recent human-caused mortality includes management control actions, defense of life, defense of property, mistaken identity by black bear or other big game hunters, poaching, and malicious killing.

Grizzly bears normally avoid people, possibly as a result of many generations of bear sport hunting and human-caused mortality. Displacement from essential habitats due to avoidance of human activities may reduce fitness of grizzly bears, affecting survival in some instances.

A number of factors influence the quality and availability of habitat for grizzly bears. However, the primary factors are: habitat effectiveness and access management. Habitat effectiveness is defined as the amount of secure grizzly bear habitat (habitat at least one quarter mile from open roads, developments, and high levels of human activity) remaining within bear management units (BMUs) after impacted areas are subtracted from the total habitat in the BMUs. Habitat security is accomplished largely through the effective management of restricted roads, and the administrative use of such roads.

Access management pertaining to maintenance of grizzly bear habitat within BMUs primarily involves the density of roads within roaded habitat, and the quantity and quality of unroaded

habitat. The effect of roads on grizzly bear behavior [Aune and Stivers 1985; McLellan and Mace (1985 *In* Interagency Grizzly Bear Committee (IGBC) 1987); Kasworm and Manley 1988; McLellan and Shackleton 1988; Aune and Kasworm 1989; and Frederick 1991], grizzly bear populations and patterns of habitat use [IGBC Grizzly Bear Compendium (IGBC 1987); Frederick 1991; Recovery Plan (Service 1993b); Mace and Manley 1993; Mace et al. 1996; Wakkinen and Kasworm 1997; and Mace et al. 1999], and grizzly bear mortality risk [McLellan and Mace (1985 *In* IGBC 1987); Dood et al. (1986 [cited as Dood et al. 1985 in text] of IGBC 1987); Aune and Kasworm 1989] has been thoroughly documented in the scientific literature. This research has clearly indicated the importance of managing three primary elements to avoid bear displacement from important habitats and to reduce bear mortality risk: (1) open road density, (2) total road density, and (3) core habitat (areas free of motorized access and high levels of human use).

Recognizing the need to incorporate this new information into the management of grizzly bears, in July 1994, the IGBC issued a Task Force Report that directed the IGBC subcommittees from each recovery zone to develop recommended parameters for core habitat, open road densities, and total road densities using the best biological information and considering the social and economic impacts of implementing those parameters (IGBC 1994). Core habitat is defined as areas greater than or equal to 0.31 miles from any road (open or restricted), motorized trail, or high intensity use area. Core habitat may contain restricted roads, but such roads must be *effectively* (emphasis added) closed with devices, including but not limited to earthen berms or barriers, or naturally closed by vegetative growth (IGBC 1998a). Additionally, per IGBC direction, core habitat should incorporate all seasonal components of grizzly bear habitat.

4. Historic and Current Distribution

Originally distributed in various habitats throughout North America from central Mexico to the Arctic Ocean, grizzly bears were thought to number approximately 50,000 in the early 1800's. However, westward human expansion and development in the 1800s led to a rapid distributional recession of grizzly bear populations. Bear numbers and distribution in the lower 48 States dropped precipitously during this period, due to a combination of habitat deterioration, commercial trapping, unregulated hunting, and livestock depredation control. On July 28, 1975, the grizzly bear was listed as threatened in the conterminous U.S., at which time the species occupied less than two percent of its former range south of Canada and was distributed in five small populations totaling an estimated 800-1,000 bears (Service 1975). The five remaining self-perpetuating or remnant populations occur primarily in mountainous regions, national parks, and wilderness areas of Washington, Idaho, Montana, and Wyoming.

A Grizzly Bear Recovery Plan was approved on January 29, 1982, and a revised plan was completed on September 10, 1993 (Service 1993b). The Recovery Plan identifies six separate recovery zones: 1) the Yellowstone (YRZ); 2) the Northern Continental Divide (NCDRZ); 3) the Cabinet-Yaak (CYRZ); 4) the Selkirk (SRZ); 5) the North Cascades (NCRZ); and 6) the Bitterroot (BRZ) (Figure 8). These grizzly bear recovery zones are also referred to as grizzly bear “ecosystems” and sometimes as “recovery units.” The Recovery Plan outlines a series of goals and objectives necessary to provide for conservation and recovery of the grizzly bear in selected areas of the conterminous 48 States.

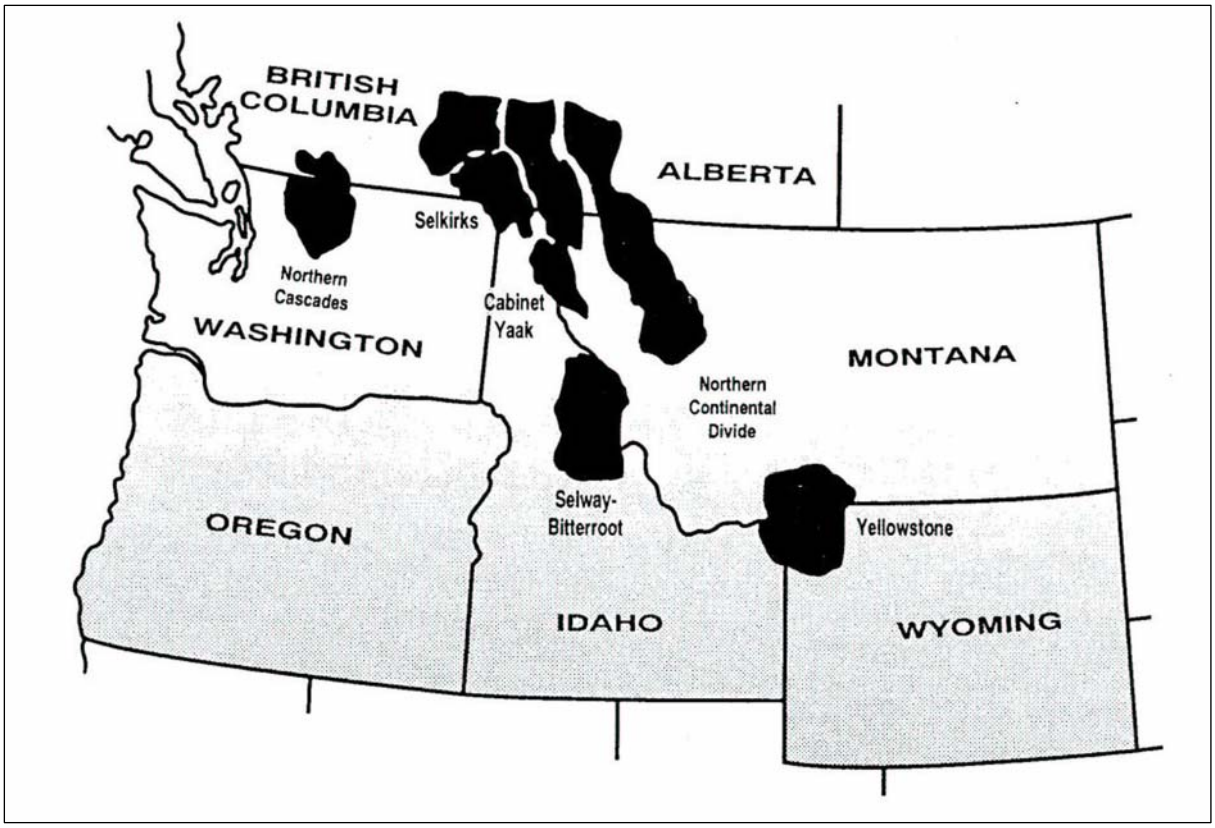

Figure 8. Present grizzly bear ecosystems in the conterminous 48 States, 1990 (the San Juan Mountains area of Colorado is not shown).

The grizzly bear population within the YRZ continues to increase and expand its range. Currently, the population is estimated at more than 500 bears and occupies approximately 7,574,244 acres in the YRZ (Service 2007). All population recovery parameters have been achieved, a conservation strategy has been developed, and on November 17, 2005, the Service proposed to delist the Yellowstone population (Service 2005). On March 29, 2007, the Service designated the Greater Yellowstone Area (GYA) population of grizzly bears, which includes the YRZ, as a distinct population segment (DPS), and removed the GYA DPS from the List of Threatened and Endangered Wildlife under the Act. The delisting became effective on April 30, 2007 (Service 2007). In the Federal Register notice (Service 2007), the Service also announced its intention to initiate a separate 5-year status review under the Act for the remaining listed grizzly bear population in the lower 48 states.

The exact size of the grizzly bear population in the NCDRZ is unknown, but recent data from the northern one third of this ecosystem indicates that there are more bears than previously thought. Grizzly bears occupy approximately 6,128,129 acres within this ecosystem. Monitoring results indicate that through 1999, recovery criteria for several parameters were met, including: 1) numbers of females with cubs; 2) numbers of BMUs with family groups; 3) occupancy requirements for BMUs; and 4) total human-caused grizzly bear mortality. However, the female grizzly bear mortality recovery criterion was not met (Service 2001a).

The status of the NCRZ population is unknown, but bear numbers are suspected to be very low and probably less than 15 grizzly bears. The MIRR action area overlaps with the Bitterroot Ecosystem, but the BRZ is not known to be occupied by a grizzly bear population at this time. In 2000, the Service released a FEIS addressing the restoration of grizzly bears to this ecosystem (Service 2000a). On September 3, 2007, a black bear hunter shot a grizzly bear in the upper Kelly Creek drainage within the BRZ. Results of the DNA analysis conducted on the bear determined that this individual originated in the Selkirk Mountains of North Idaho and that this bear had not been captured before. Prior to this incident grizzly bear occurrence had not been confirmed for more than 60 years in the BRZ. At various times other grizzly bears have been reported in the BRZ but conclusive evidence of their presence has not previously existed. The Kelly Creek bear illustrates that it is possible for a grizzly bear to reach the BRZ through natural dispersal. At this time, the Service does not consider this one male grizzly bear to constitute a population. Future surveys are planned in this area, upon which the Service in conjunction with other agencies, will determine whether the BRZ contains a grizzly bear population. Until that time, section 7 consultation for land management activities is not warranted for the BRZ.

The SRZ represents approximately six percent of the total occupied grizzly bear range remaining within the conterminous 48 States. The Selkirk grizzly bear population is contiguous with Canadian populations. This recovery zone is the only one that includes part of Canada because the habitat in the U.S. portion is not of sufficient size to support a minimum population. Approximately 47 percent of the recovery zone lies within British Columbia, where land ownership is 65 percent crown (public) land and 35 percent is private. Grizzly bear numbers in this ecosystem are estimated at 46 animals. Known human-caused mortalities remain high, with a total of 25 mortalities occurring near roads, fifteen of these since 1993 (Wakkinen and Kasworm 2004). Population trend data are inconclusive. However, recovery plan criteria for bear reproduction, distribution, and mortality have not been met (Wakkinen and Johnson 2008).

The CYRZ represents approximately eight percent of the total occupied grizzly bear range remaining within the conterminous 48 States. Grizzly bear numbers in this ecosystem are estimated at approximately 40 animals (Kasworm et al. 2007). Known bear mortalities in this ecosystem since 1999 have ranged from zero to six bears per year. Although sample sizes are small, existing data indicate a declining population in this ecosystem (Wakkinen and Kasworm 2004; Kasworm et al. 2007). Additionally, recovery plan criteria for grizzly bear numbers, reproduction, distribution, and mortality have not been met (Kasworm et al. 2007).

a. Current Status of the SRZ and CYRZ Grizzly Bear Populations

As depicted in Figure 8 above, the SRZ and CYRZ are the only two currently occupied grizzly bear ecosystems that overlap with IRAs, and therefore are highlighted in this Opinion. The Bitterroot Grizzly Bear Ecosystem (BE) also overlaps several IRAs, but is not considered occupied at this time.

The Recovery Plan identifies three indicators of population status, based on reproduction, numbers, and distribution, to be used as the basis for recovery in each ecosystem: (1) sufficient reproduction to offset the existing levels of human-caused mortality; (2) adequate distribution of breeding animals throughout the area; and (3) a limit on total human-caused mortality. Based on

these indicators, three specific parameters have been developed to monitor the status of grizzlies in each ecosystem: (1) the number of unduplicated females with cubs seen annually; (2) the distribution of females with young or family groups throughout the ecosystem; and (3) the annual number of known human-caused mortalities. To facilitate population monitoring and habitat evaluation within each ecosystem, the recovery zones are divided into areas designated as BMUs. These BMUs, designed to approximate the average home range of a female grizzly (approximately 100 square miles), assist in characterizing grizzly bear numbers and distribution within each ecosystem and in tracking cumulative effects (Christensen and Madel 1982).

As stated previously, the management of three primary elements is considered essential to avoid bear displacement from important habitats and to reduce bear mortality risk: (1) open road density, (2) total road density, and (3) core habitat (areas free of motorized access and high levels of human use). Each grizzly bear recovery zone has specific standards relative to these three elements, and these standards are considered necessary for the conservation of grizzly bears.

b. Current Status of the SRZ

The SRZ encompasses approximately 1,957 square miles (mi^2) in northeastern Washington, northern Idaho, and southern British Columbia. Approximately 47 percent is located within British Columbia, and approximately 53 percent (1,081 mi^2) lies within the U.S. Land ownership in the U.S. portion of the Selkirk recovery zone is approximately 80 percent Federal, 15 percent State, and 5 percent private lands. Forty-two percent of the entire recovery zone is under Federal ownership and therefore could be subject to management for recovery under the Act. The environmental baseline discussion for this biological opinion will include that portion of the SRZ within the U.S.

The U.S. portion of the Selkirk recovery zone is divided into 10 BMUs, ranging in size from approximately 30-160 mi^2. Eight of these BMUs are administered at least in part by the IPNF. Of the remaining areas, one is administered by the Colville National Forest (LeClerc BMU located entirely within Washington state), and the second encompasses approximately 160 mi^2 (roughly 8 percent of the Recovery Zone) owned by Idaho Department of Lands (IDL) east of Priest Lake. The smallest 30 square mile BMU (Lakeshore) lies along the west side of Priest Lake. While providing important grizzly bear habitats regularly occupied by grizzlies, this BMU serves primarily as a buffer for development and high human activity associated with Priest Lake.

According to the Recovery Plan, the minimum population goal for the SRZ is 90 bears (Service 1993b). Grizzly bears also occur in and use areas outside the SRZ recovery zone and population parameters include bears observed up to 10 miles outside the recovery zone boundary (Service 1993b). This biological opinion will use the term SRZ to refer to the SRZ recovery zone and the band of habitat up to 10 miles around the SRZ recovery zone within which Recovery Plan parameters are reported.

The following recovery goals are established in the Recovery Plan (USFWS 1993b):

1. Six unduplicated females with cubs over a running 6-year average both inside the recovery zone and within a 10-mile area immediately surrounding the recovery zone, including Canada;
2. Seven of the 10 BMUs on the U.S. side occupied by females with young on a running 6-year sum of observations; and
3. Known, human-caused mortality may not exceed four percent of the population estimate based on the most recent 3-year sum of females with cubs; furthermore, no more than 30 percent of this four percent mortality limit shall be females. These mortality limits cannot be exceeded during any two consecutive years for recovery to be achieved. Presently grizzly bear numbers are so small in this ecosystem that the mortality goal is zero known human-caused mortality.

The most recent available information on the status of this population relative to the demographic recovery plan parameters is presented in Table 17 (Wakkinen and Johnson 2008). Based on this information, the SRZ is not currently meeting the recovery goals outlined in the Recovery Plan.

Table 17. 2007 status of the Selkirk Ecosystem in relation to the demographic recovery targets (Wakkinen and Johnson 2008).

	TARGET	**2007 STATUS**
Females w/cubs (6-yr avg)	≥6.0	0.5 (3/6)
Mortality limit (4% of minimum estimate)	0	3.3 (6 yr avg)
Female mortality limit (30% of total mortality)	0	1.5 (6 yr avg)
Distribution of females w/young	7 of 10 BMUs	4 of 10[1] BMUs

[1] Myrtle, Sullivan-Hughes, Long-Smith, and Kalispel-Granite BMUs were occupied by family groups in 2007.

The Recovery Plan identifies three indicators of population status, based on reproduction, numbers, and distribution, to be used as the basis for recovery in each ecosystem: (1) sufficient reproduction to offset the existing levels of human-caused mortality; (2) adequate distribution of breeding animals throughout the area; and (3) a limit on total human-caused mortality. Based on these indicators, three specific parameters have been developed to monitor the status of grizzlies in each ecosystem: (1) the number of unduplicated females with cubs seen annually; (2) the distribution of females with young or family groups throughout the ecosystem; and (3) the annual number of known human-caused mortalities.

Table 18 displays the annual status of the SRZ grizzly bear population relative to the recovery plan criteria from 1995 to 2007. Wakkinen and Kasworm (2004) reported that of the 40 known

grizzly bear mortalities which occurred in the SRZ between 1983 and 2002, the majority (32) were human-caused. Mortality causes included a combination of management removals, poaching, hunting, mistaken identity, self-defense, and unknown causes. However, based on the estimated demographic variables for this ecosystem, they indicated a 67.3 percent probability that the SRZ grizzly bear population was increasing.

Table 18. Annual Selkirk recovery zone grizzly bear minimum unduplicated counts of females with cubs and known human-caused mortality, 1995-2007 (after Wakkinen and Johnson 2008)

YEAR	Annual FWS''s	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 [1]	Total Human Caused Mortality 6 Year Average	Female Human Caused Mortality 6 Year Average
1995	1	0	1	2	0	0		
1996	1	0	0	1	0	0		
1997	1	0	0	1	0	0		
1998	1	0	0	1	0	0		
1999	1	0	0	3	0.4	0.1	1.5	0.2
2000	2	0	0	0	0.6	0.2	1.3	0.2
2001	2	0	0	1	0.8	0.2	1.2	0.0
2002	0	1	2	6	0.6	0.2	2.0	0.3
2003	1	1	3	4	0.2	0.1	2.5	0.8
2004	1	0	0	1	0.2	0.1	2.5	0.8
2005	1	0	0	1	0.2	0.1	2.3	0.8
2006	0	1	2	4	0.2	0.1	3.0	1.2
2007	0	2	2	3	0.0	0.0	3.3	1.5

[1] The current mortality goal is zero known human-caused mortality.

On October 2, 2002, a map of the current grizzly bear distribution was finalized through a coordinated effort involving the Service, USFS, IDFG, and Montana Fish, Wildlife, and Parks (Figure 9) (USFS 2003). The map depicts several areas of grizzly bear occupancy outside of, but adjacent to, the Recovery Zones. Two areas of grizzly bear occupancy adjacent to the SRZ have been delineated: 1) Priest; and 2) Pack River. Some grizzly bears are residing, at least

seasonally, in the Pack and Priest River areas. However, as portions of these bears' known movement patterns overlap the recovery zone, they have been included in the population estimate of 46 grizzly bears for the SRZ.

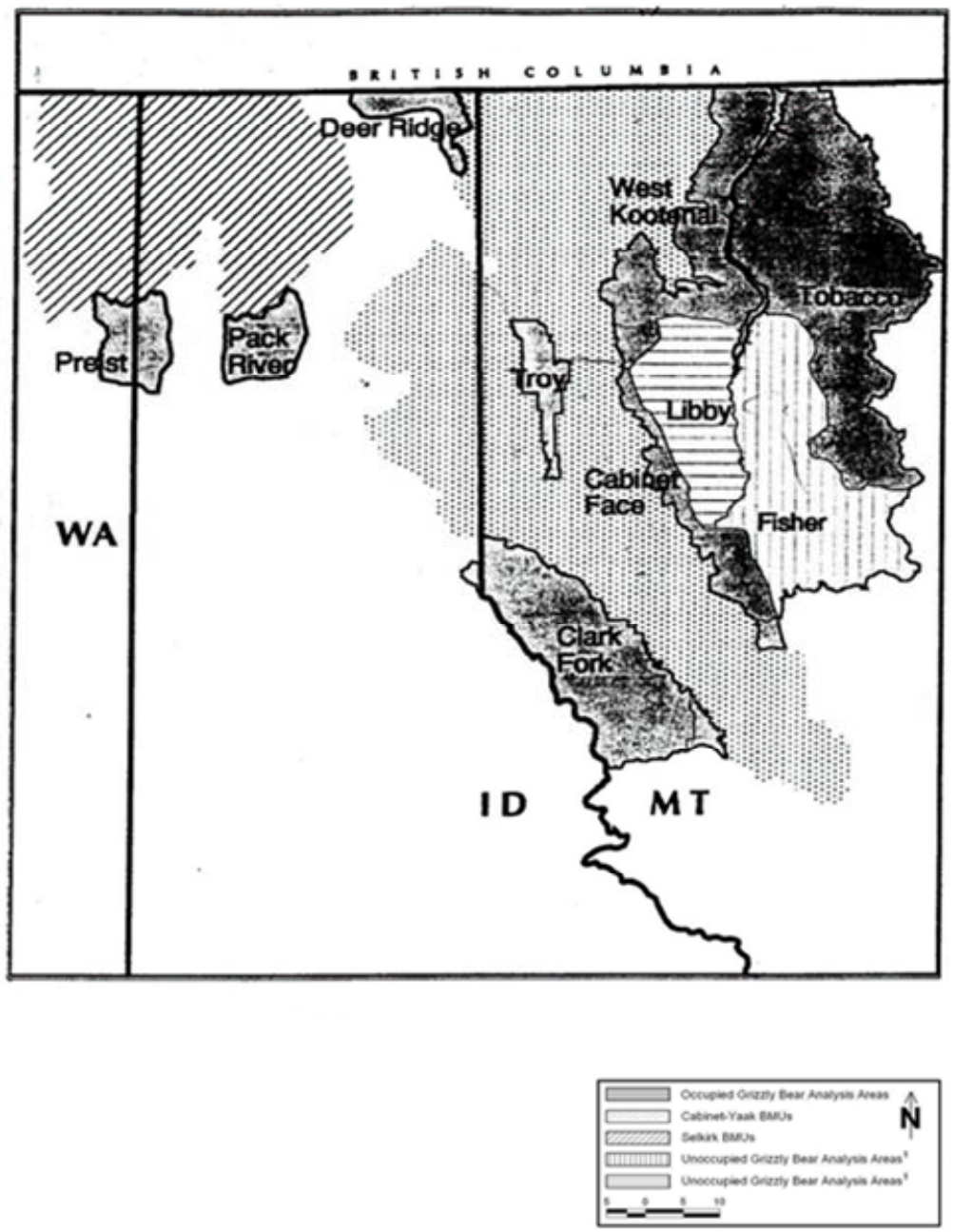

Figure 9. Grizzly Bear Analysis Areas Outside the CYRZ.[1]

c. Factors Affecting the Status of the SRZ Grizzly Bear Population

The Service's 1999 finding concluded that grizzly bears in the SRZ were in danger of extinction due to: 1) habitat alteration and human intrusion into grizzly bear habitat; and 2) a small population facing potential isolation by activities across the border in Canada (Service 1999). The finding also concluded that cumulative impacts of recreation, timber harvest, mining and other forest uses with associated road construction had reduced the amount of effective habitat for grizzly bears. Further, the finding stated that access management plans had the potential to reduce this threat, but had not been fully implemented.

1). Mortality:

Table 19 reports the total known grizzly bear mortality associated with the SRZ from 1982 to 2007. Within the recovery zone or within 10 miles of it over this 25-year period, there were 59 known grizzly bear mortalities, of which 51 were human-caused (9 were radio-collared bears). Based on a population estimate of 46 grizzly bears, the current annual known human-caused mortality rate is approximately 4.4 percent, or about 2.0 bears per year (51 grizzly bear mortalities over 25 years). The current female grizzly bear human-caused annual mortality rate is approximately 1.1 percent, or about 0.5 bears per year (13 known human-caused female mortalities over 25 years). However, actual mortality numbers are likely to be higher, given the remote habitats typically occupied by grizzlies and the low probability of finding a dead bear unless it was radio-collared. A review of known grizzly bear mortalities in British Columbia and Alberta, Canada, Idaho, Washington, and Montana concluded that of the studies reviewed, management agencies would have been unaware of about half of the deaths of radio-collared grizzly bears if not for the radio collars (McLellan et al. 1999). Adjusting for the unknown, unreported mortality by using methods in McLellan et al. (1999) (i.e., removing a total of 19 human-caused grizzly bear mortalities from the calculation because they were only determined because of a radio collar, or resulted from management agency removals or legal kills) results in a total estimate of 70 human-caused mortalities (known and unknown). Based on a population estimate of 46 grizzly bears, this equates to an average annual known and unknown human-caused mortality rate of approximately 6.1 percent, or about 2.8 bears per year (70 grizzly bear mortalities over 25 years).

Over the most recent 6-year period (2002-2007), there were 21 total known human-caused grizzly bear mortalities within the recovery zone or within 10 miles of it; seven of which were females. The total known human-caused grizzly bear mortalities, not including 2007 mortalities, are reflected in the 2006 Recovery Plan goals for this population (Table 17).

Attraction of grizzly bears to improperly stored food and garbage is identified by the Recovery Plan as one of the principal causes of grizzly bear mortality (Service 1993b). In 1995, after becoming habituated to human activities and conditioned to improperly stored food in a campground, a male grizzly bear was collared and relocated. Soon after being relocated, the bear was illegally killed by a hunter. Additionally, improper sanitation procedures may have resulted in the mortalities of several bears in 2006.

Table 19. Known grizzly bear mortalities associated with the SRZ, 1982-2007.

Mortality Date	Tag #	Sex	Age	Location	Mortality Category and Cause	<500 meters from open road
Spring 1982	None	M	AD	Priest River, ID	Human, Poaching	Unk
Autumn 1982	None	Unk	Unk	LeClerc Creek, WA	Human, Unknown	Unk
1985	867-85a[1]	Unk	Cub	N/A	Natural	Unk
Summer 1985	949[1]	M	4.5	US/BC border	Human, Unknown	Unk
Autumn 1986	898[1]	F	1.5	Grass Creek, ID	Human, Unknown[2]	Unk
1986	None	M	Unk	BC Unit 4-8	Human, Management Removal	Yes
Spring 1987	1005[1]	M	10.5	Wall Mtn, BC	Human, Poaching	Unk
Autumn 1987	962[1]	M	7.5	Trapper Creek, ID	Human, Poaching	No
Autumn 1988	1085[1]	F	3.5	Cow Creek, ID	Human, Mistaken Identity	No
Autumn 1988	1050[1]	M	1.5	Porcupine Creek, BC	Natural	No
Spring 1988	None	M	Unk	BC Unit 4-7	Human, Legal Hunt	Unk
Summer 1989	1044[1]	F	20+	Laib Creek, BC	Natural, Conspecific	No
Autumn 1990	1042	F	3.5	Maryland Creek, BC	Human, Malicious	Yes
1990	None	M	Unk	BC Unit 4-8	Human, Management Removal	Yes
Summer 1991	1076[1]	F	20+	Next Creek, BC	Natural	No
1991	876-92a[1]	Unk	1.5	Unknown	Natural	Unk
Summer 1992	None	M	Unk	Lost Creek, BC	Human, Defense of Property	Yes
Summer 1992	1090[1]	M	5.5	Laib Creek, BC	Unknown	Unk
Autumn 1992	1015	F	12.5	Monk Creek, BC	Human, Self Defense	No
Spring 1993	None	M	Unk	BC Unit 4-7	Human, Legal Hunt	Unk
Autumn 1993	867[1]	F	15.5	Willow Creek, WA	Human, Malicious[2]	No
Autumn 1993	867-93a[1]	Unk	0.5	Willow Creek, WA	Human, Malicious[2]	No
Autumn 1993	867-93b[1]	Unk	0.5	Willow Creek, WA	Human, Malicious[2]	No
1993	None	M	Unk	BC Unit 4-8	Human, Management Removal	Yes
Spring 1994	None	M	Unk	BC Unit 4-7	Human, Legal Hunt	Unk
Spring 1994	13	M	AD	BC Unit 4-20	Human, Legal Hunt	Unk
Spring 1995	None	F	1.5	Boundary Creek, ID	Human, Unknown	Yes
Autumn 1995	1100[1]	M	2.5	Granite Pass, WA	Human, Mistaken Identity	Yes
1996	1027-96b[1]	Unk	Cub	Unknown	Natural	Unk
Autumn 1996	1022	M	2.5	Boswell, BC	Human, Management Removal	Yes
Autumn 1997	None	M	1.5	Salmo, BC	Human, Management Removal	Yes
Spring 1998	1023	M	4.5	BC Unit 4-26	Human, Legal Hunt	Unk
Summer 1998	None	M	3.5	Usk, WA	Human, Under Investigation	Yes
Autumn 1999	None	M	22	Wyundel, BC	Human, Depredation	Yes
Autumn 1999	1032	M	18	Procter, BC	Human, Depredation	Yes
Autumn 1999	9810	M	10	Smith Creek, ID	Human, Under Investigation	Unk
Summer 2001	7	F	13	Porcupine Creek, BC	Natural	Yes
Autumn 2001	None	M	Unk	Cottonwood Creek, BC	Human, Management Removal	Yes
Spring 2002	17	M	3.5	Nelway, BC	Human, Depredation	Yes
Autumn 2002	None	F	AD	Blewett, BC	Human, Under Investigation	Yes
Autumn 2002	None	Unk	1	Blewett, BC	Human, Under Investigation	Yes
Autumn 2002	None	Unk	1	Blewett, BC	Human, Under Investigation	Yes

Autumn 2002	None	Unk	1	Blewett, BC	Human, Under Investigation	Yes
Autumn 2002	19	M	3.5	Lamb Creek, ID	Human, Under Investigation[2]	Yes
Spring 2003	None	Unk	Unk	Apple Orchards lower Smith Ck	Human, Under Investigation	Yes
Summer 2003	30	F	2.5	Salmo, BC	Human, Management Removal	Yes
Autumn 2003	None	F	AD	Blewett, BC	Human, Under Investigation	Yes
Autumn 2003	None	F	1	Blewett, BC (offspring of above)	Human, Under Investigation	Yes
Spring 2004	None	M	AD	Hughes Meadows	Human, Under Investigation	Yes
Autumn 2004	32	M	7	Nordman/Bismark Meadows	Possible mortality, under investigation	Unk
Spring 2005	31	M	5	East of Creston, BC	Human, Legal Hunt	Unk
Spring 2005	None	Unk	Unk	E. Fork Priest River	Likely human caused	Unk
Spring 2006	None	Unk	Unk	Procter, BC	Sanitation (?)	Yes
Fall 2006	None	Unk	Yrlng	Blewett, BC	Sanitation (?)	Yes
Fall 2006	None	Unk	Yrlng	Blewett, BC	Sanitation (?)	Yes
Fall 2006	None	F	AD	Blewett, BC	Sanitation (?)	Yes
Summer 2007	29	F	AD	Kootenay Pass, Highway 3, BC	Vehicle Collision	Yes
Table 19 (continued)						
Fall 2007	1000	F	AD	Pass Creek Pass, Washington	Human, Illegal, Mis ID (?)	Yes
Fall 2007	5393	M	Sub AD	Priest River, Idaho	Sanitation, Habituation	Yes

[1]Part of radio collar sample at time of mortality.
[2]Human caused mortality determined only because of the radio collar on the animal at the time of death.

2). Habitat:

As described previously, habitat effectiveness (aka habitat security) is defined as the amount of secure grizzly bear habitat (habitat at least one quarter mile from open roads, developments, and high levels of human activity) remaining within BMUs after impacted areas are subtracted from the total habitat in the BMUs. Based on work conducted by Christensen and Madel (1982), the IPNF's LRMP requires maintenance of a minimum of 70 square miles (mi^2) of secure habitat in each BMU. The intent of this requirement is to provide the minimum viable habitat needed to avoid grizzly bear displacement.

Table 20 displays the current condition of each BMU relative to the IPNF's LRMP requirement to maintain a minimum of 70 mi^2 of secure habitat. Currently 60 percent (6 of 10) of the BMUs provide at least 70 mi^2 of secure habitat. Of the four BMUs that provide less than 70 mi^2 of secure habitat two (Le Clerc and State Land) are not managed by the IPNF, and one (Lakeshore) is not capable of providing 70 mi^2 of secure habitat as it is only 30 mi^2 in size. The Lakeshore BMU, while being small and primarily serving as a buffer for development and high human activities along Priest Lake, does contain important seasonal grizzly bear habitats regularly occupied by grizzly bears. The BMU currently provides approximately 10 mi^2 of secure habitat. The remaining BMU, managed by the IPNF, not meeting the standard is the Blue Grass BMU, which encompasses 90 mi^2 immediately south of the U.S./Canada border. The Blue Grass BMU is a high priority BMU providing key, year-round habitat for the Selkirk grizzly bear population.

Maintenance of adequate habitat conditions in this BMU is particularly essential because of its importance to the Selkirk grizzly bear population. The Blue Grass BMU currently provides approximately 67 mi^2 of secure habitat.

Table 20. 2006 Status of SRZ BMUs relative to open roads, total roads, and core habitat (Lyndaker, pers.comm. 2008).

BMU[1]	**Percent with Open Roads >1mi/sq.mi**	**Percent with Total Roads >2 mi/sq.mi**	**Percent Core Habitat**	**Habitat Security (sq.mi)**
Blue-Grass	30	28	50	67
Long-Smith	21	14	73	85
Kalispell-Granite	29	29	48	101
Salmo-Priest	30	25	66	76
Sullivan-Hughes	24	19	61	81
Myrtle	30	21	58	72
Ball-Trout	17	11	72	77
Le Clerc[2]	59	27	38	61
Lakeshore	82	54	19	10
State Land	?	?	?	?

[1]The lands managed by the IDL east of Priest Lake are not represented in this table as standards for core habitat, TMRD, or OMRD have not been established for this area.
[2]BMU managed by the CNF

Information on the level of habitat security within the remainder of the SRZ is not available as non-Federal entities do not necessarily manage their lands to maintain secure habitat for grizzly bears. State and private forest management activities occur within the SRZ. As indicated previously, the IDL manages an approximately 160 mi^2 area east of Priest Lake. Table 20 does not contain information for this area relative to core habitat or open motorized route density (OMRD), and total motorized route density (TMRD). The IDL administers these lands primarily for timber production to provide funding for the State school system. This area contains a significant amount of important grizzly bear habitat, and bears are known to occur in this area. Approximately 34 mi^2 of this area fall within the Upper Priest Lake Scenic Area and the Selkirk Crest Scenic Area, managed primarily for recreational and aesthetic purposes.

The remainder of the area is actively managed for timber production. The IDL implements road management with the use of gates to restrict access, however, the Service has no information regarding existing total and open road densities or amount of core habitat within this area. When information on habitat conditions is not available, the Service typically provides the benefit of the doubt to the species and assumes a conservative scenario to provide for protection of the species. Therefore, for purposes of characterizing baseline conditions in the IDL administered area, the Service assumes that, outside of the 34 mi^2 of Scenic Areas mentioned above, open and total road densities exceed those values previously described, and that available core habitat is less than 55 percent of the area.

Stimson Lumber Company (SLC) and Forest Capital Partners, LLC (Forest Capital), the primary private forest managers in the SRZ, manage their ownerships primarily for timber production. The majority of SLC ownership within the SRZ occurs within the LeClerc BMU; approximately 27 percent (21,000 acres) of the land within the LeClerc BMU is owned by SLC. The SLC has entered into a Conservation Agreement with the CNF and the Service to minimize adverse affects to grizzly bears resulting from implementation of activities on its ownership within the LeClerc BMU through road and vegetation management, including but not limited to ensuring: open road density on its ownership does not exceed 1 mi/mi^2 during the non-denning period of April 1 through November 15; no increase in roads open to public motorized use, except where such increase will result in additional available habitats for grizzly bear; administrative use levels on certain roads do not exceed 12 round trips during the spring period (April 1 through June 15); that their land contributes proportionally to the maintenance of a minimum of 40 percent vegetative cover; maintenance of vegetative screening adjacent to open roads; and the distance to cover from any point within harvest units does not exceed 600 feet by limiting the size of harvest units.

Currently, Forest Capital has not entered into an agreement with the Service for grizzly bear management on its ownership within the SRZ. However, recognizing the need to manage for grizzly bears within the SRZ, Forest Capital voluntarily: maintains year-round gate closures on many of their roads; replaces damaged gates promptly; installs road closures on newly constructed roads; closes their land to spring and fall black bear hunting; and conducts logging operations during the winter to the extent practicable within BMUs (McClintock, pers. comm. 2004).

Additional secure habitat is likely to occur within the British Columbia portion of the SRZ, particularly in the Stagleap Provincial Park, located just north of the border. In 1995, the British Columbia provincial government developed a grizzly bear conservation strategy with a stated goal of enhancing habitat protection through land use planning processes (Service 1999). Quantitative information on the amount of secure habitat in the British Columbia portion of the SRZ is not currently available.

Habitat security is accomplished largely through the effective management of restricted roads, and the administrative use of such roads. However, while the IPNF's LRMP does not specifically address administrative use, pursuant to the Service's 2001 Biological Opinion, the IPNF is required to limit administrative use on restricted roads to 57 round trips per active bear year (April 1 through November 15) per road, divided seasonally (Service 2001b). The Service's 2001 Biological Opinion states that such use shall be apportioned as follows: 19 round trips in spring (April 1 thru June 15); 23 round trips in summer (June 16 through September 15); and 15 round trips in fall (September 16 through November 15). Administrative use is defined as passenger vehicle access on a restricted road to conduct non-mechanized activities, such as planting, regeneration surveys, timber sale layout, etc.

As stated previously, the management of three primary elements is considered essential to avoid bear displacement from important habitats and to reduce bear mortality risk: (1) open road density, (2) total road density, and (3) core habitat (areas free of motorized access and high levels

of human use). Each grizzly bear recovery zone has specific standards relative to these three elements, and these standards are considered necessary for the conservation of grizzly bears.

Due to the importance of roads in affecting grizzly bear behavior and habitat quality, the IGBC directed each of the ecosystems to develop grizzly bear habitat management parameters addressing core habitat, and open and total motorized route densities. A detailed discussion related to the effects of roads on grizzly bears and the history associated with developing motorized access standards within the SRZ is contained in the Service's 2004 "Biological Opinion for the Kootenai, Idaho Panhandle, and Lolo National Forests Land and Resource Management Plans Amendment for Motorized Access Management Within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones" (hereafter referred to as 2004 Access BO) (Service 2004a), and is incorporated here by reference. It should be noted that the 2004 Access Opinion was withdrawn by the Service on March 17, 2007 because the USFS action upon which it was based was remanded by the District Court for the District of Montana for further consideration. However, the road-related effects analysis contained within the 2004 Access Opinion is still relevant and therefore applicable to this analysis for the MIRR. Therefore, in addition to managing for secure grizzly bear habitat (aka effective habitat), the current approach to managing motorized access within BMUs in the SRZ also involves the management of core habitat, OMRD and TMRD.

Relative to the IPNF, the Service's 2001 BO established the following standards, based upon Wakkinen and Kasworm's (1997) research on grizzly bears in the SRZ and CYRZ, for core habitat, OMRD, and TMRD: 1) each BMU must contain a minimum of 55 percent core habitat; 2) TMRD greater than 2 miles/square mile (mi/mi^2) must average 26 percent or less of each BMU; and 3) OMRD greater than 1 mi/mi^2 must average 33 percent or less of each BMU (Service 2001b). Table 20 displays the current condition of each BMU, relative to the established standards

Currently, of the nine BMUs managed by the Forest Service, five (55 percent) contain at least 55 percent core habitat, seven (78 percent) have open road densities exceeding 1 mi/mi^2 in 33 percent or less of the BMU, and five (55 percent) have total road densities exceeding 2 mi/mi^2 in 26 percent or less of the BMU (Table 21). The Lakeshore and LeClerc BMUs do not meet any of the standards. However, as discussed earlier, because of the Lakeshore's small size (30 square miles), achievement of the habitat parameters may not be possible. The LeClerc BMU is primarily managed by the CNF, and has a high degree of intermingled private land, which may make achieving all habitat parameters very difficult.

As identified above, grizzly bears are living in areas outside of but adjacent to the Recovery Zones. Relative to the SRZ, grizzly bear occupancy occurs in two separate mapped areas adjacent to the southwestern (Priest Area) and southeastern (Pack River Area) boundaries of the recovery zone. The Priest Area circumscribes an area of approximately 151 mi^2, and the Pack River Area circumscribes an area of approximately 103 mi^2 (Table 21). Both areas contain a mixture of federal and non-federal land.

The status of these areas relative to linear open and total road densities is described in Table 21. We currently do not have any information regarding the quantity of unroaded habitat contained within these areas.

Table 21. 2007 road density status of grizzly bear occupancy areas adjacent to the SRZ (Lyndaker, pers. comm. 2008).

Area	**Size (mi^2)**	**Linear Total Road Density on National Forest Lands Only (mi/mi^2)**	**Linear Open Road Density on National Forest Lands Only (mi/mi^2)**
Priest	151	3.1	3.1
Pack River	103	1.1	1.0

The linear road density information identified in Table 21 is not analogous to, and therefore may not be comparable with, road density information derived using a moving windows analysis technique, upon which the road density standards for the Recovery Zones are based. A moving windows analysis is a spatial analysis of road density distribution, while a linear road density analysis is simply a quantification of the amount (i.e., length) of roads per unit area that exist on the landscape.

3). Other Factors:

The SRZ is one of the smallest grizzly bear recovery zones at approximately 1,957 mi^2, and only 53 percent is contained within the conterminous U.S. The remainder (47 percent) lies within British Columbia. Because a substantial portion of the SRZ lies within British Columbia, grizzly bear management measures and habitat management efforts in that province play a significant role in the status of grizzly bears in this ecosystem. The British Columbia portion of the SRZ is subjected to the same forestry, mining, recreation, and road construction pressures that exist in the U.S., all of which affect grizzly bear habitat. As noted previously, in 1995, the British Columbia provincial government developed a grizzly bear conservation strategy to ensure effective, enhanced protection and management of habitat through land use planning processes, new protected areas, and the Forest Practices Code.

In summary, the Service, in its 1999 administrative finding determined that the Selkirk grizzly bear population was warranted for listing as endangered (Service 1999). This determination was made in large part because of the small size of the SRZ, grizzly bear mortalities, small size of the grizzly bear population, and existing habitat conditions. Grizzly bear mortalities, particularly human-caused mortalities, have affected a significant portion of the grizzly bear population over the last 21 years, with mortalities remaining substantially higher than Recovery Plan goals. None of the Recovery Plan goals (relative to bear reproduction, distribution, and mortality) have been met. It is speculated that, in recent years, the Selkirk grizzly bear population may have experienced growth. However, as annual population trend modeling has been statistically inconclusive, the speculation of population growth is based on the perceptions of some researchers familiar with this recovery zone. Given the foregoing discussion of grizzly bear mortality and habitat conditions within this recovery zone, there is clearly a need for improved protection of grizzly bears and their habitat within this Ecosystem. Past and ongoing habitat

management efforts have resulted in improved habitat conditions within the SRZ, although several BMUs still have unacceptably high road densities and insufficient core habitat.

d. Current Status of the CYRZ

The CYRZ encompasses approximately 2,600 mi^2 (1,728,000 acres), is located in northwest Montana and northeast Idaho, and is administered primarily by three forests: IPNF, Kootenai National Forest (KNF), and Lolo National Forest (LNF). The CYRZ is bordered to the north by the Canadian border, to the south by the Clark Fork River, to the west by the towns of Moyie Springs and Clark Fork, and to the east by the town of Libby, and is bisected by the Kootenai River. Land ownership within the CYRZ is approximately 90 percent Federal (1,555,200 acres), 5 percent State (86,400 acres), and 5 percent private lands (86,400 acres).

The CYRZ is often described in terms of having two portions, the Cabinet Mountains portion forming the southern half of the CYRZ, and the Yaak portion forming the northern half of the CYRZ. The Cabinet Mountains portion covers approximately 978,000 acres, is topographically diverse with a steep mountain range up to 8,700 feet near the center and more definable seasonal habitats, and contains the Cabinet Mountains Wilderness area. The Cabinet Mountains Wilderness area is approximately 34 miles long, varies from 0.5 to 7 miles wide, and consists of 94,272 acres of higher elevation habitat. The Cabinet Mountains portion is connected to the Yaak portion by two relatively narrow corridors of habitat, approximately 7.5 miles wide, separated by a broad, privately owned valley where the town of Troy is located. The Yaak portion is 466,000 acres and has gentler topography and slightly lower elevations, up to 7,700 feet. Seasonal grizzly bear habitats are not as clearly definable in the Yaak portion. More grizzly bear research and telemetry work has occurred in the Yaak than in the Cabinet Mountains portion of the ecosystem.

As mentioned above, recovery zones are divided into BMUs to facilitate grizzly bear management. To this end, 22 BMUs averaging approximately 100 mi^2 have been established in the CYRZ. Fifteen BMUs are managed entirely by the KNF, 4 BMUs are managed entirely by the IPNF, 1 BMU is managed entirely by the LNF, and two BMUs are jointly managed by the KNF and IPNF.

According to the Recovery Plan, the minimum population goal for the CYRZ is 100 bears (Service 1993b). Grizzly bears also occur in and use areas outside the CYRZ, and therefore, population parameters include bears observed up to 10 miles outside the recovery zone boundary (Service 1993b). This biological opinion will use the term CYRZ to refer to the CYRZ and the band of habitat up to 10 miles around the CYRZ within which Recovery Plan parameters are reported.

The following recovery goals for the CYRZ have been established in the Recovery Plan (Service 1993b):

1. Six females with cubs over a running 6-year average both inside the recovery zone and within a 10 mile area immediately surrounding the recovery zone, excluding Canada;
2. Eighteen of 22 BMUs occupied by females with young from a running 6-year sum of verified evidence; and
3. Known, human-caused mortality not to exceed 4 percent of the population estimate based on the most recent 3-year sum of females with cubs. Furthermore, no more than 30 percent of this 4 percent mortality limit shall be females. These mortality limits cannot be exceeded during any 2 consecutive years for recovery to be achieved. Presently, grizzly bear numbers are so small in this ecosystem that the mortality goal shall be zero known human-caused mortalities.

The most recent available information on the status of this population relative to the demographic recovery plan parameters are presented in Table 22 (Kasworm, et al. 2007). Based on this information, none of the recovery goals are currently being met in the CYRZ.

Table 22. Status of the Cabinet-Yaak recovery zone during 2001-2006 in relation to the demographic recovery targets from the grizzly bear recovery plan (Kasworm et al. 2007).

Recovery Criteria	Target	2001-2006
Females w/cubs (6-yr avg)	6.0	1.7 (10/6)
Human Caused Mortality limit (4% of minimum estimate)	0.7	1.7 (6 yr avg)
Female Human Caused mortality limit (30% of total mortality)	0.2	1.3 (6 yr avg)
Distribution of females w/young	18 of 22	13 of 22

As stated previously regarding the SRZ the Recovery Plan identifies three indicators of population status, based on reproduction, numbers, and distribution, to be used as the basis for recovery in each ecosystem: (1) sufficient reproduction to offset the existing levels of human-caused mortality; (2) adequate distribution of breeding animals throughout the area; and (3) a limit on total human-caused mortality. Based on these indicators, three specific parameters have been developed to monitor the status of grizzlies in each ecosystem: (1) the number of unduplicated females with cubs seen annually; (2) the distribution of females with young or family groups throughout the ecosystem; and (3) the annual number of known human-caused mortalities.

Table 23 displays the annual status of the CYRZ grizzly bear population relative to the recovery plan criteria from 1988 to 2006. A total of 41 grizzly bear mortalities are known to have occurred inside or within 10 miles of the CYRZ (including Canada) from 1982-2006, 68 percent (28 of the 41 mortalities) of which were human-caused (Kasworm et al. 2007). Of the 28 known human-caused mortalities, 12 occurred from 1983-1998 and 16 occurred from 1999-2006 (Kasworm et al. 2007). Human-caused mortality included poaching, mistaken identity, unknown, but human-caused, defense, management removal, research, train collision, and

hunting. Based on the estimated demographic variables for this ecosystem, Kasworm et al. (2007) indicated a 94.0 percent probability that the CYRZ grizzly bear population is declining.

Table 23. Annual Cabinet-Yaak recovery zone (excluding Canada) grizzly bear minimum unduplicated counts of females with cubs and known human-caused mortality, 1988-2006 (Kasworm et al. 2007).

YEAR	ANNUAL FWC'S	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[1]	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	0	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
2005	1	1	2	3	0.7	0.2	1.8	1.5
2006	1	0	0	0	0.7	0.2	1.7	1.3

[1] Presently grizzly bear numbers are so small in this ecosystem that the mortality goal shall be zero known human-caused mortalities.

As stated previously, a map of the current grizzly bear distribution was finalized through a coordinated effort involving the Service, USFS, IDFG, and Montana Fish, Wildlife, and Parks (Figure 9) (Service 2003). The map depicts several areas of grizzly bear occupancy outside of, but adjacent to, the Recovery Zones. Several areas of grizzly bear occupancy adjacent to the CYRZ have been delineated (Figure 9). The status of these areas relative to linear open and total road densities is described in Table 26. We currently do not have any information regarding the quantity of unroaded habitat contained within these areas.

e. Factors Affecting the Status of the CYRZ Grizzly Bear Population

Similar to the SRZ, the Service's 1999 finding concluded that grizzly bears in the CYRZ were in danger of extinction due to: 1) habitat alteration and human intrusion into grizzly bear habitat; and 2) a small population facing potential isolation by activities across the border in Canada (Service 1999). The finding also concluded that cumulative impacts of recreation, timber harvest, mining and other forest uses with associated road construction had reduced the amount

of effective habitat for grizzly bears. Further, the finding stated that access management plans had the potential to reduce this threat, but had not been fully implemented.

Small populations (50 or fewer individuals) have a high risk of extinction (The World Conservation Union 2003 in Proctor et al. 2004). Simulating a population of 50 animals, and using vital and mortality rates similar to grizzly bears in the CYRZ, Proctor et al. (2004) estimated an 85 percent probability of extinction within 100 years. The grizzly bear population in the CYRZ is estimated at 40 animals (Kasworm et al. 2007). Population augmentation is one management tool that may reduce the threat of extinction (Proctor et al. 2004). Four subadult female grizzly bears were translocated into the Cabinet Mountains between 1990 and 1994 (Kasworm et al. 1998). Three of the four translocated female bears survived and remained in the Cabinets for more the 1 year, and one of the female bears appears to have subsequently produced offspring (Kasworm et al. 2006). Based on the apparent success of the initial augmentation effort, four more female grizzly bears have been recently translocated into the Cabinet Mountains. One female was released 2005, one female in 2006, and two females in 2008. All bears were fitted with GPS radio collars to enable monitoring of their movements; however the first bear released in 2005 lost her collar in 2007, and the second bear released in 2006 may have recently lost her collar as well (Kasworm, pers. comm. 2008).

Potential isolation from grizzly bears in the Canada portion of the greater CYE is 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, the Service has no information documenting movement of grizzly bears from the Yaak area north of Highway 2 to the Cabinet Mountains south of Highway 2 (Servheen, pers. comm. 2008). The combination of the highway, river, railroad and associated development may be or may become a substantive barrier to movement of grizzly bears in the ecosystem.

1). Mortality:

Table 24 reports the total known grizzly bear mortality associated with the CYRZ from 1982 to 2006. Within the recovery zone or within 10 miles of it (including Canada) over this 25-year period, there were 41 known grizzly bear mortalities, of which 28 were human-caused. Based on a population estimate of 40 grizzly bears, the current annual known human-caused mortality rate is approximately 2.8 percent, or about 1.1 bears per year (28 grizzly bear mortalities over 25 years). The current female grizzly bear human-caused annual mortality rate is approximately 1.5 percent, or about 0.6 bears per year (15 known human-caused female mortalities over 25 years). However, actual mortality numbers are likely to be higher, given the remote habitats typically occupied by grizzlies and the low probability of finding a dead bear unless it was radio-collared. A review of known grizzly bear mortalities in British Columbia and Alberta, Canada, Idaho, Washington, and Montana concluded that of the studies reviewed, management agencies would have been unaware of about half of the deaths of radio-collared grizzly bears if not for the radio collars (McLellan et al. 1999). Adjusting for the unknown, unreported mortality by using methods in McLellan et al. (1999) results in a total estimate of 37 human-caused mortalities

(known and unknown). Based on a population estimate of 40 grizzly bears, this equates to an average annual known and unknown human-caused mortality rate of approximately 3.7 percent, or about 1.5 bears per year (37 grizzly bear mortalities over 25 years).

Table 24. Known grizzly bear mortalities associated with the CYRZ, 1982-2002 (after Kasworm et al. 2007).

Mortality Date	**Tag #**	**Sex**	**Age**	**Location**	**Mortality Category and Cause**	**Public Reported**
October 1982	None	M	AD	Grouse Creek, ID	Human, Poaching	Yes
October 1984	None	Unk	Unk	Harvey Creek, ID	Human, Mistaken Identity	Yes
9/21/1985	14	M	AD	Lyons Gulch, MT	Human, Self Defense	Yes
7/14/1986	106	Unk	Cub	Burnt Creek, MT	Natural	No
10/25/1987	None	F	Cub	Flattail Creek, MT	Human, Mistaken Identity	Yes
May 1988	134	M	AD	BC Unit 4-5[1]	Human, Hunting	Yes
10/31/1988	None	F	AD	Seventeen Mile Creek, MT	Human, Self Defense	Yes
7/6/1989	129	F	3.5	Burnt Creek, MT	Human, Research	No
1990	192	M	2.5	Poverty Creek, MT	Human, Poaching	Yes
1992	678	F	37	Trail Creek, MT	Unknown	Yes
7/22/1993	258	F	7.5	Libby Creek, MT	Natural	No
Summer 1993	258-cub	Unk	Cub	Libby Creek, MT	Natural	No
10/4.1995	None	M	AD	Ryan Creek, BC[1]	Human, Management	Yes
5/6/1996	302[1]	M	3.5	Dodge Creek, MT	Human, Under Investigation	No
October 1996	355[1]	M	AD	Gold Creek, BC[1]	Human, Under Investigation	No
May 1997	None	M	AD	Libby Creek, MT	Human, Poaching	Yes
6/4/1999	106	F	21	Seventeen Mile Creek, MT	Natural, Conspecific	No
6/4/1999	106-cub	Unk	Cub	Seventeen Mile Creek, MT	Natural, Conspecific	No
6/4/1999	106-cub	Unk	Cub	Seventeen Mile Creek, MT	Natural, Conspecific	No
10/12/1999	596	F	2.5	Hart Creek, BC[1]	Human, Self Defense	Yes
11/15/1999	358	M	15	Yaak River, MT	Human, Management	No
6/1/2000	538-cub	Unk	Cub	Hawkins Creek, BC[1]	Natural	No
6/1/2000	538-cub	Unk	Cub	Hawkins Creek, BC[1]	Natural	No
7/1/2000	303-cub	Unk	Cub	Fowler Creek, MT	Natural	No

11/15/2000	592	F	3	Pete Creek, MT	Human, Under Investigation	No
5/5/2001	None	F	1.5	Spread Creek, MT	Human, Mistaken Identity	Yes
6/18/2001	538-cub	Unk	Cub	Cold Creek, BC[1]	Natural	No
6/18/2001	538-cub	Unk	Cub	Cold Creek, BC[1]	Natural	No
October, 2001	None	F	AD	Elk Creek, MT	Human, Train collision	Yes
2002	None	Unk	Unk	Bloom Creek, BC[1]	Human, Mistaken Identity	Yes
7/1/2002	577	F	1.5	Marten Creek, MT	Natural	No
10/28/2002	None	F	4	Porcupine Creek, MT	Human, Under Investigation	Yes
11/18/2002	353/584	F	7	Yaak River, MT	Human, Poaching	Yes
11/18/2002	None	F	Cub	Yaak River, MT	Human, Poaching	Yes
11/18/2002	None	Unk	Cub	Yaak River, MT	Human, Poaching	No
11/18/2002	None	Unk	Cub	Yaak River, MT	Human, Poaching	No
10/14/2004	None	F	AD	Linklater Creek, BC[1]	Human, Management	Yes
5/15/2005	31	M	AD	Russell Creek, BC[1]	Human, Hunting	Yes
10/9/2005	None	F	3-4	Government Creek, MT	Human, Train collision	Yes
10/9/2005	694	F	2-3	Pipe Creek, MT	Human, Poaching	Yes
10/19/2005	668	M	4	Yaak River, MT	Human, Mistaken Identity	Yes
5/28/2006	None	F	8	Cold Creek, BC[1]	Human, Research	No
6/1/2006	292	F	5	Rainy Creek, BC	Human, Management	Yes

[1] The recovery plan (Service 1993b) specifies that human-caused mortality or female with young sightings from Canada will not be counted toward recovery goals in this recovery zone.

Excluding mortalities in Canada, over the most recent 6-year period (2001-2006), there were 10 total known human-caused grizzly bear mortalities within the recovery zone or within 10 miles of it within the United States; seven of which were females. The total known human-caused grizzly bear mortality within the recovery zone or within 10 miles of it within the United States is reflected in the 2006 Recovery Plan goals for this population (Table 22). As indicated previously, the improper storage of attractants, such as food items and garbage, may lead to habituation of grizzly bears. Such food conditioning of grizzly bears may require management control actions, consisting of capture and relocation, to reduce the potential for adverse encounters between people and bears. In many instances, however, the ultimate fate of food conditioned grizzly bears is mortality due to their increased vulnerability to illegal shooting or legal defense of life or management control actions. In 1999, a male grizzly bear was euthanized because of adverse interactions with humans precipitated by lax sanitation procedures. In May

2003, a subadult male grizzly bear in the CYRZ had to be captured and relocated due to repeated entrances into a dumpster that was not resistant to grizzly bears.

Within the CYRZ, only two grizzly bear management control actions have been implemented since 1982 as a result of sanitation related problems, which might imply that lax sanitation is not an issue. However, lax sanitation in the CYRZ is a concern. The infrequent need to implement grizzly bear control actions may simply reflect the low density of grizzly bears throughout this ecosystem, rather than indicating sanitation practices are not leading to grizzly bear food-conditioning and/or habituation. For example, black bears are substantially more numerous in this ecosystem and, each year, many must be captured, and removed or destroyed because they have become accustomed and/or attracted to human food and/or garbage. Therefore, unless this potential for habituation is removed, it can be expected that grizzly bear problems related to sanitation will increase as grizzly bear numbers increase in this ecosystem.

2). Habitat:

Parts of three national forests are contained within the CYRZ: IPNF, KNF, and LNF. Each of the Forests developed and implemented LRMPs in the 1980's, incorporating measures addressing management of grizzly bears. The Service completed section 7 consultation on the IPNF, KNF, and LNF LRMPs and issued biological opinions to each of the Forests in 1986 (Service 1986), 1985 (Service 1985), and 1982 (Service 1982), respectively. The Service concluded that implementation of the LRMPs, with measures addressing grizzly bear management, would not be likely to jeopardize the continued existence of the grizzly bear. The measures implemented by the Forests were based upon the existing scientific information available at the time relative to grizzly bear management and behavior. The Forests developed standards and guidelines related to grizzly bear management to: 1) avoid the likelihood of jeopardizing the continued existence of grizzlies in the Selkirk and Cabinet-Yaak Ecosystems; 2) contribute toward grizzly bear conservation; and 3) coordinate Forest activities with the biological needs of the grizzly. However, while the objectives of grizzly bear management were the same across all three Forests, the actual standards adopted and implemented under each of the individual Forest's LRMPs were slightly different.

The LRMPs for the KNF and IPNF require management of security habitat (effective grizzly bear habitat), while the LNF LRMP contains no such requirement. The IPNF LRMP requires maintaining effective grizzly bear habitat of at least 70 mi^2 within each BMU, and the KNF LRMP requires maintaining effective grizzly bear habitat of at least 70 percent within each BMU. However, because BMUs are approximately 100 mi^2 in the CYRZ, the KNF requirement to manage for 70 percent security habitat essentially equates to the maintenance of 70 mi^2 of effective grizzly bear habitat within each BMU, which is similar to the IPNF. While the LNF LRMP does not require management for security habitat, pursuant to its LRMP, in the early 1990s the LNF adopted a requirement for management of displacement habitat within Bear Management Analysis Areas (BMAA; subunits within a BMU that are delineated for cumulative effects analysis).

Currently, 64 percent (14 of 22) of BMUs in the CYRZ provide at least 70 percent or 70 mi^2 of effective grizzly bear habitat (Table 25). Two of the BMUs that currently do not provide 70

percent security habitat are BMUs 10 and 12, which contain 64 and 62 percent security habitat, respectively. As described previously, the northern and southern portions of the CYRZ are connected by two relatively narrow corridors of habitat. This area of connectivity is contained entirely within the boundaries of BMUs 10 and 12. Thus, these two BMUs may play a particularly important role in providing for grizzly bear movement between the Yaak portion (northern) and the Cabinet Mountain portion (southern) of the CYRZ. This may also have implications for maintaining the demographic and genetic stability, and thus overall population sustainability of grizzly bears within the CYRZ. The Grouse BMU currently contains 51 mi^2 of security habitat. However, federal lands comprise less than 75 percent of this BMU. The BMU managed by the LNF (BMU 22) currently provides 67 percent security habitat.

Table 25. 2007 status of CYRZ BMUs relative to open roads, total roads, core habitat, and habitat security (after USFS 2008a; Lyndaker pers. comm. 2008).

BMU	**Percent with Open Roads >1mi/sq.mi**	**Percent with Total Roads >2 mi/sq.mi**	**Percent Core Habitat**	**Habitat Security[1]**
1 Cedar[2]	12	9	83	88
2 Snowshoe[2]	19	16	76	79
3 Spar[2]	27	27	60	73
4 Bull[2]	37	26	62	64
5 Saint Paul[2]	28	23	58	72
6 Wanless[2]	32	33	53	66
7 Silver Butte/Fisher[2]	25	23	62	77
8 Vermillion[2]	33	24	54	77
9 Callahan[2]	27	26	58	76
10 Pulpit[2]	44	28	52	64
11 Roderick[2]	28	29	52	75
12 Newton[2]	42	31	56	62
13 Keno[3]	34	25	59	64
14 Northwest Peak[3]	28	26	55	76
15 Garver[2]	30	32	46	71
16 East Fork Yaak[2]	29	27	53	73
17 Big Creek[2]	30	18	55	74
18 Boulder[4]	29	35	50	73
19 Grouse[4]	59	59	32	51
20 North Lightning[4]	36	19	62	71
21 Scotchman[4]	35	27	63	67
22 Mt. Headley[5]	38	37	51	67

[1]Habitat Security numbers are from 2006 and were obtained from Johnson and Roberts (2007). For the KNF and LMF numbers are reported on a square mile basis of the BMU. For the IPNF numbers are reported on a percentage basis of the BMU.
[2] Managed solely by the KNF
[3]Management is shared between the KNF and IPNF
[4]Managed solely by the IPNF
[5]Managed solely by the LNF

Additionally, while the LNF LRMP does not require management of security habitat, it does require the LNF to manage for displacement habitat within BMAAs. Seventeen BMAAs have been delineated within BMU 22.

The KNF LRMP also requires management for grizzly bears within areas delineated as Management Situation 1 (MS 1). Management Situation 1 grizzly bear habitat is defined as those lands that contain grizzly population centers and/or habitat that is needed for the survival and recovery of the species. In those areas, the needs of the grizzly bear will be given priority over other management considerations. Land uses which can affect grizzly bears and/or their habitat will be made compatible with grizzly needs or such uses will be disallowed or eliminated (IGBC 1987). Within MS 1 habitat, the KNF is required to maintain an average linear open road density at least 0.75 mi/mi^2. The LNF, pursuant to the changes adopted in the early 1990s (referenced above), is required to manage for grizzly bears within MS 1 habitat as well. Within MS 1 habitat, the LNF is required to: 1) maintain an average linear open road density <1 mi/mi^2 within BMAAs; and 2) maintain an average linear open road density of < 0.75 mi/mi^2 within BMAAs with known (a) movement corridors, (b) concentrations of spring/fall feeding components, and/or (c) protein concentrations.

The importance of managing motorized access on restricted roads within grizzly bear habitat was previously discussed. Pursuant to the Service's 2001 Opinion, the IPNF is required to limit administrative use on restricted roads to 57 round trips per active bear year (April 1 through November 15) per road divided seasonally as follows: 19 round trips in spring (April 1 thru June 15); 23 round trips in summer (June 16 through September 15); and 15 round trips in fall (September 16 through November 15). Administrative use is defined as passenger vehicle access on a restricted road to conduct non-mechanized activities, such as planting, regeneration surveys, timber sale layout, etc. (Service 2001). The KNF and LNF LRMPs and the Service's 1985 and 1982 Opinions on the KNF and LNF's LRMPs, respectively, do not specifically require managing administrative access, however, both the KNF and LNF have agreed to manage administrative access on restricted roads in accordance with the levels prescribed in the Service's 2001 Opinion on the IPNF's LRMP.

The three forests (i.e., IPNF, KNF, LNF) also manage for the three primary grizzly bear habitat parameters (core habitat, OMRD, and TMRD) on their ownerships within the CYRZ. Management of core habitat, OMRD and TMRD are considered necessary to avoid the displacement of grizzly bears from important seasonal habitats and to reduce grizzly bear mortality within the CYRZ. The Service's 1995 and 1996 Opinion on the KNF and LNF LRMP's, respectively, require the KNF and LNF to incorporate IGBC recommendations relative to the management of core habitat, and open and total roads densities (Service 1995, 1996). The IGBC recommended the development and establishment of ecosystem specific grizzly bear parameters address the management of core habitat, OMRD, and TMRD. In accordance with IGBC direction, Wakkinen and Kasworm (1997) developed and recommended specific levels addressing the management of these three grizzly bear habitat components within the CYRZ. Thus, pursuant to their LRMPs, and the 1995 and 1996 biological opinions, the KNF and LNF are required to manage for OMRD and TMRD, as well as core habitat. Regarding the IPNF, the Service's 2001 Opinion established the following standards, based upon Wakkinen and Kasworm (1997) research on grizzly bears in the SRZ and CYRZ for core habitat, OMRD, and

TMRD: 1) each BMU must contain a minimum of 55 percent core habitat; 2) TMRD greater than 2 miles/square mile (mi/sq.mi) must average 26 percent or less of each BMU; and 3) OMRD greater than 1 mi/sq.mi must average 33 percent or less of each BMU (Service 2001). The status of the CYE BMUs relative to these three parameters is displayed in Table 25.

Currently 13 BMUs (59 percent) contain at least 55 percent core habitat, 14 (59 percent) have open road densities exceeding 1 mi/mi^2 in 33 percent or less of the BMU, and 11 (50 percent) have total road densities exceeding 2 mi/mi^2 in 26 percent or less of the BMU (Table 25). Only 36 percent (8 of 22) of the BMUs meet or provide better habitat conditions for all three grizzly bear habitat parameters (core habitat, OMRD, TMRD) recommended by Wakkinen and Kasworm (1997).

As stated previously, several areas have been delineated in which grizzly bears are living outside of but adjacent to recovery zones. Figure 2 depicts several of these areas adjacent to the CYRZ. Table 26 displays the status of these areas relative to linear total and open road density and road density on National Forest lands. We currently do not have any information regarding the quantity of unroaded habitat contained within these areas.

Table 26. 2007 Road density status of Grizzly Bear Occupancy Areas adjacent to the CYRZ; (KNF 2008, Lyndaker pers. comm. 2008).

Area	**Size (mi^2)**	**Linear Total Road Density on National Forest Lands (mi/mi^2)**	**Linear Open Road Density on National Forest Lands (mi/mi^2)**
Troy	68	2.5	1.1
Clark Fork	442	2.6	0.9
Cabinet Face	150	3.9	2.2
West Kootenai	326	3.0	1.3
Tobacco	802	3.0	2.0
Libby	290	3.4	1.9
Fisher	559	2.7	1.0
Deer Ridge	64	2.6	2.4

The linear road density information identified in Table 26 is not analogous to, and therefore may not be comparable with road density information derived using a moving windows analysis technique, upon which the road density standards for the Recovery Zones are based. A moving windows analysis is a spatial analysis of road density distribution, while a linear road density analysis is simply a quantification of the amount (i.e., length) of roads per unit area that exist on the landscape.

3). Other Factors:

The CYRZ is long and narrow (see Figure 9). An area of predominantly private land of mixed ownerships, approximately 22 miles long and up to 5 miles wide, occurs near the middle of the

recovery zone. It includes the town site of Troy, Montana, the Kootenai River corridor just east and west of Troy, and the private lands along the Highway 56 corridor. With the exception of the town of Troy, which is not included within the boundaries of the CRYZ, this area is classified as MS-3. In the event of human-bear conflicts, the conflicts are resolved in favor of humans. This area encompasses primarily low elevation spring habitat rendered mostly unsuitable for grizzly bears as a result of the high density of people. As grizzly bear numbers slowly increase in the ecosystem, the area presents a higher risk of grizzly bear mortality due to potential human-bear conflicts. Risks to grizzly bears increase as concentrations of residences, roads, unsecured human-food attractants such as garbage cans, dumpsters, and pet foods, hunting and other recreation increase in and around this area. It also presents an area that likely displaces some bears, particularly some females and females with cubs, away from low-elevation habitat that might be important for their continued survival and development.

The Highway 2 corridor runs east-west across the CYRZ, and includes a major state highway, railroad, the Kootenai River, and private land development and roads. The corridor bisects the ecosystem between the Yaak and Cabinet Mountains portions. Although the impacts of this corridor on grizzly bear movements within the CYRZ have not specifically been investigated, the Service has no information documenting movement of grizzly bears between the Yaak and Cabinet Mountains. The Highway 2 corridor could be or may eventually become a significant barrier to grizzly bear movement between the Yaak and Cabinet Mountains. A total barrier to movement would present a substantive impediment to grizzly bear recovery in the CYRZ, affecting the distribution and demographic and genetic health of CYRZ grizzly bears. Impacts would especially affect those grizzly bears in the Cabinet Mountains, as connectivity with grizzly bear populations in Canada would essentially be severed. Further, the small number of grizzly bears in the Cabinet Mountains amplifies the demographic and genetic concerns related to such a barrier.

The Revett Troy copper/silver mine occurs in BMU 3. The mine has been in operation for over 20 years and affects approximately 50 acres of disturbed area at the mine site on national forest system lands and an additional 400 acres of private lands (Service 2003). The mine is currently operating due to favorable market conditions. Also, maintenance (primarily pumping water from the underground cavities) continues and roads remain gated to the public. Approximately 4 years of additional operation is possible on this ore body (Service 2003). The Revett Minerals Inc. owns the Troy Mine, and intends to complete the unit while the permitting, evaluation adits and development adits are completed at the Rock Creek Mine. Impacts from current activities at the Troy mine are not known to substantially impact bears in the southern portion of the CYRZ. Impacts during additional operation would primarily be associated with additional workers living in the area. However, most of these employees would also work at the Rock Creek Mine. A large ingress of people into the area associated with the Troy Mine in addition to that associated with the Rock Creek mine is not expected (Service 2003).

The Rock Creek copper/silver mine would be located in the southern Cabinet Mountains in BMUs 4, 5, and 6. The mine's permit boundary would encompass 1,560 acres; 483 acres would be directly impacted by mining activity, including 3.5 miles of road construction and 5.4 miles of road reconstruction; 1,078 acres would remain undisturbed. Of the 483 acres directly impacted by mining activity, 323 acres are national forest and 160 acres are privately owned. However,

the area in which grizzly bears would be directly or indirectly influenced by the mine or its activities at some time during the mine's development and operation could equate to as much as 7,044 acres. Construction and operation of the mine could increase mortality risk to grizzly bears, and further exacerbate existing fragmentation problems within the CYRZ. However, the owners of the mine have agreed to incorporate conservation measures and a mitigation plan to reduce potential impacts associated with mine construction and operation on grizzly bears. Additionally, the Service has issued a biological opinion and incidental take statement with accompanying reasonable and prudent measures and terms and conditions to further reduce the effects of the proposed mine upon grizzly bears and/or their habitat (Service 2006).

Several patented mining claims occur along the borders of the Cabinet Mountains Wilderness. Large scale mineral development is unlikely on many of these small patents (Service 2003) due to their size and the nature of the mineral deposits. However, as patented (private) land inholdings, these scattered small parcels increase the risk of adverse grizzly bear-human interactions due to increased potential for contact with people, food and other attractants. The Forest is required to provide reasonable access under current laws and regulations and can influence access across national forest system lands, but has no jurisdiction over activity on private lands. Potential uses of these private lands include timber harvest, residences, cabins or other facilities, and hunting camps. All properties can legally be accessed by foot or horseback, and some have motorized access rights.

Major projects that have affected grizzly bears in the CYRZ include the Bull Lake Estates Subdivision Project in BMU 3 (Subdivision Project), and the Idaho Transportation Department's (ITD) Junction State Highway-1, Northeast Boundary County Project (ITD Highway Project). Regarding the Subdivision Project, the Forest requested consultation on issuance of an access permit across national forest system lands. The Service issued a biological opinion and an incidental take statement on the Subdivision Project in 2000 (Service 2000b). The ITD Highway Project is located in eastern Idaho, between the Yaak portion of the CYRZ and the Selkirks ecosystem (Service 2002). The project will upgrade 16 miles of roadway on United States Highway 95 from the State Highway 1 junction to the Canadian border in Boundary County, Idaho. The purpose of this project is to upgrade the roadway to current engineering and safety standards, increase public safety, replace deteriorating bridges across the Moyie River, and accommodate increasing commercial traffic flow. Design features include wildlife crossing structures. The Service issued a biological opinion and an incidental take statement on the ITD Highway Project in 2002 (Service 2002).

5. Critical Habitat

No critical habitat has been designated for the grizzly bear, therefore, none will be affected.

B. Environmental Baseline

1. Status of the Species within the Action Area

Portions of both the CYRZ and SRZ, and one area of delineated grizzly bear occupancy adjacent to the SRZ (Pack River) are contained within the action area (Figure 10). As described in

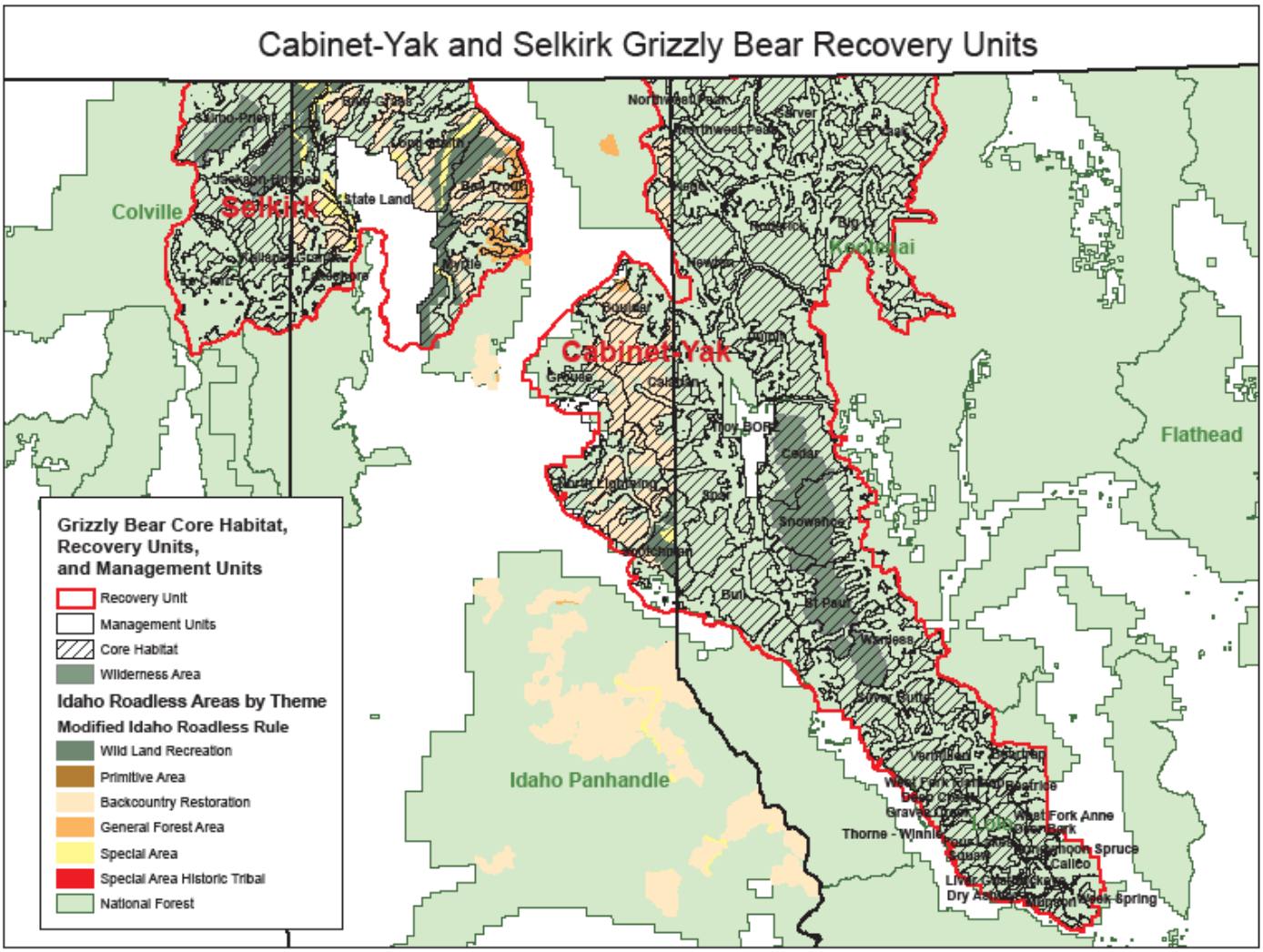

Figure 10. Grizzly bear core habitat, bear management units (BMUs), and IRAs in the Selkirk and Cabinet-Yaak Ecosystems (also called Recovery Units)

Chapter II's "Description of the Proposed Action" Section, the action area essentially comprises roadless areas within Idaho. To that extent, in Idaho, roadless areas are contained and dispersed throughout all 8 BMUs managed by the USFS (i.e. Blue Grass, Long-Smith, Ball-Trout, Myrtle, Lakeshore, Kalispel-Granite, Sullivan-Hughes, and Salmo-Priest) and the single State Land BMU in the SRZ, and 7 BMUs (Northwest Peak, Keno, Boulder, Grouse, North Lightning, Scotchman, Callahan, and Spar) in the CYRZ. Additionally, a portion of the White Mountain IRA is also contained within the Pack River Area (PRA) of reoccurring use by grizzly bears adjacent to the SRZ. Documented sightings and credible reports of individual grizzly bears, female grizzly bears with cubs, and family groups of grizzly bears exist for all BMUs and the PRA within the action area, with the exception of the Grouse BMU in the CYRZ (Wakkinen and Johnson 2008; Kasworm et al. 2007; Kasworm, pers. comm. 2008; Layser, pers. comm. 2008). The Grouse BMU is comprised of a high percentage of non-federal land. The Grouse BMU is only comprised of about 54 percent federal ownership; the other majority landowners are IDL

and Forest Capital LLC. However, while there are no documented sightings from the Grouse BMU, given that documented sightings of grizzly bears exist from BMUs surrounding the Grouse BMU to the north, east, and south, it is highly likely that undocumented/undetected use of habitat within the Grouse BMU by grizzly bears has occurred.

2. Factors Affecting the Species Environment within the Action Area

Within the action area, grizzly bears are affected by the same mechanisms affecting the overall status of the grizzly bear populations in the Selkirk and Cabinet-Yaak Ecosystems, as described above in the "Current Status of the SRZ and CYRZ Population" section.

Roads in grizzly bear habitat pose a serious risk of mortality to grizzly bears. Grizzly bear mortality can result directly from collisions with vehicles, but more commonly, indirectly through increased exposure to and interaction with humans. The specific relationship between roads and the mortality risk to bears is difficult to quantify. The level of human use of roads is one of several factors influencing the mortality risk associated with any road. Forest roads facilitate human access into grizzly bear habitat, which directly or indirectly increases the mortality risk to grizzly bears. Grizzly bears are increasingly vulnerable to illegal and legal harvest as a consequence of increased road access by humans in Montana (Mace et al. 1996) and in the Yellowstone region (Mattson et al. 1992). In southeastern British Columbia, McLellan and Shackleton (1988) reported roads increased access for legal hunters and poachers, the major source of adult grizzly mortality in that area. McLellan (1989) reported that 7 of 13 successful legal hunters interviewed had been on a road when they harvested a grizzly bear.

In the North Fork of the Flathead River Valley in British Columbia, McLellan and Mace (1985) found that a disproportionate number of mortalities occurred near roads. In the Yellowstone ecosystem, Mattson and Knight (1991) reported that areas influenced by secondary roads and major developments were most lethal to bears. Aune and Kasworm (1989) reported 63 percent of known, human-caused grizzly bear deaths on the east front of the Rocky Mountains occurred within 1 kilometer (0.6 miles) of roads, including 10 of 11 known female grizzly bear deaths. In Montana, Dood et al. (1986) reported that 48 percent of all known, non-hunting mortalities during the period of 1967 through 1986 occurred within 1 mile of roads. Kasworm et al. (2007) reported that 64 percent (7 of 11) of human-caused grizzly bear mortalities on National Forest lands within the CYRZ were within 500 meters of an open road. Within the SRZ, 68 percent (30 of 44) of human-caused mortalities were within 500 meters of an open road (Wakkinen and Johnson 2008).

The effect of roads upon grizzly bear behavior and habitat use has also been well documented in the scientific literature. Several authors have documented grizzly bear avoidance of roads and the resulting displacement from adjacent habitat (Aune and Stivers 1985, McLellan and Mace 1985, Kasworm and Manley 1988, McLellan and Shackleton 1988, Aune and Kasworm 1989, Frederick 1991, and Wakkinen and Kasworm 1997). Mace and Manley (1993) documented displacement of grizzly bears from closed roads, and found that grizzly bear use of areas declined as total road densities (open and closed roads) exceeded 2 mi/mi^2 and open road densities exceeded 1 mi/mi^2. Mace et al. (1996) found that grizzly bears are able to utilize roaded habitats, but that spatial avoidance increases and survival decreases as traffic levels and

road densities increase. Wakkinen and Kasworm (1997) found that areas with total road densities greater than 2 mi/mi^2 and/or open road densities greater than 1 mi/mi^2 were used less than expected (avoided) by grizzly bears. A number of studies have indicated that female grizzlies with cubs tend to avoid roads (Mace et al. 1996, and Zager 1980 *In*: Service 1993). The occurrence of roads and the associated human disturbance within high quality bear habitats can also influence indirect mortality risk by disrupting efficient foraging strategies resulting in nutritional stress, restricting reproduction and dispersal, and potentially reducing carrying capacity (Mattson et al. 1987 *In*: Frederick 1991, and Aune and Stivers 1985 In: Frederick 1991). Nutritional demands of female bears with cubs are triple that of other bears, making their access to nutritional food sources and uninterrupted feeding essential during spring and fall (Jonkel 1982 *In*: Frederick 1991). The IGBC recognized the effect of roads upon grizzly bears through its recommendation to develop ecosystem specific management parameters for core habitat, TMRD, and OMRD (IGBC 1998).

C. Effects of the Proposed Action

Under section 7(a)(2) of the Act, "effects of the action" refers to the direct and indirect effects of an action on the species or critical habitat, with the effects of other activities interrelated or interdependent with that action. Unlike most USFS project analyses of alternatives and environmental consequences, the analysis of the MIRR does not include an analysis of project implementation and resulting direct effects; it is an analysis of activities that could occur as allowed by the MIRR and the indirect and cumulative effects that could occur from those actions. It is an analysis of what is allowed under the MIRR versus an analysis of on-the-ground activities, and therefore has no direct effects. Indirect effects are those caused by the proposed action and are later in time, but still are reasonably certain to occur (50 CFR 402.02). The effects of the action are added to the environmental baseline to determine the future baseline and to form the basis for the determination in this opinion. Should the Federal action result in a jeopardy situation and/or adverse modification conclusion, the Service may propose reasonable and prudent alternatives that the Federal agency can take to avoid violation of section 7(a)(2). The impacts discussed below are the result of indirect impacts that could occur as a result of implementing the MIRR.

The MIRR proposes direction for the management of roadless areas in Idaho. The MIRR would establish five management area themes for individual roadless areas: WLR; PRIM, SAHTS; BCR; and GFRG (Figure 10). The proposed themes span a continuum that includes both prohibitions and permissive allocations. Allocation to a specific theme is not intended to mandate or direct the USFS to propose or implement any action; rather the themes provide an array of permitted and prohibited activities regarding: timber cutting, sale, or removal; road construction and reconstruction; and mineral activities.

According to the Assessment, the provisions set forth in the MIRR take precedence over any inconsistent land management plan component. Land management plan components that are not inconsistent with the MIRR will continue to provide guidance for projects and activities within IRAs. In the USFS review of existing management direction for grizzly bears they have determined that none of the species specific direction in LRMPs is inconsistent with the permissions or prohibitions provided in the MIRR management themes. The existing LRMP

management direction provides specific criteria for designing projects or activities; therefore existing LRMP management direction for grizzly bear would be applied. The Assessment further states that LRMP components will shape and guide the projects undertaken as allowed by the MIRR, which would include standards for grizzly bear protection. The Assessment states that if the LRMP grizzly bear standards cannot be met, the proposed project would have to be modified, abandoned, or the plan amended. According to the Assessment, applicable LRMP components for grizzly bear are those outlined in Appendix B of the Assessment (USFS 2008b). Furthermore, the Service's 2001 BO on the IPNF's 1987 LRMP sets forth specific terms and conditions for the management of grizzly bear habitat within the CYRZ and SRZ on IPNF ownership.

The Assessment relied on several assumptions when analyzing the potential effects of implementing the MIRR (USFS 2008). The Assessment assumed that road construction, reconstruction, and timber harvest in IRAs would be similar to that which has occurred over the past five years, which was due primarily to implementation of the 2001 Roadless Rule and declining budgets. The following projections (which would be distributed across all of the IRAs) are not included in the proposed action, but were provided in the Assessment to facilitate the analysis of the potential effects resulting from activities allowed by the MIRR:

- 1,000 acres of annual timber harvest,
- 15,000 acres of timber harvest over 15 years, and
- Annual road construction/re-construction would equal 3.3 miles or less. About 2.3 miles of which would associated with timber harvest and would be temporary in nature, and 1.0 miles would be for other reasons such as rights-of-way access, locatable minerals, and phosphates.

IRAs overlap approximately 23 percent and 7 percent of the entire area encompassed within the SRZ and CYRZ, respectively (USFS 2008). According to the Assessment, currently grizzly bear core habitat comprises 47% (325,498 core acres out of 688,734 total acres) of the SRZ, and 55% (929,607 core acres out of 1,692,290 total acres) of the CYRZ. Within the SRZ and CYRZ, IRAs are essentially analogous to grizzly bear core habitat (Figure 10). Grizzly bear core habitat is defined as areas greater than or equal to 0.31 miles from any road (open or restricted), motorized trail, or high intensity use area. Core habitat may contain restricted roads, but such roads must be *effectively* (emphasis added) closed with devices, including but not limited to earthen berms or barriers, or naturally closed by vegetative growth (IGBC 1998a). As described in the "Current Status of the SRZ and CYRZ Population" and as further elucidated in the Service's 2004 Access Opinion, management of grizzly bear core habitat within BMUs of the SRZ and CYRZ is vital to the stability and recovery of both populations (Service 2004). Given the current habitat conditions and grizzly bear population status within both the SRZ and CYRZ, the Service's long standing position is that there can be no degradation of the existing habitat conditions within these recovery zones, which includes losses of core habitat. In fact, to improve the status of both populations within the SRZ and CYRZ, the Service's position is that, based upon the grizzly bears' life history needs as determined through scientific research specific to these to ecosystems (e.g., Wakkinen and Kasworm 1997), additional habitat improvements must occur (i.e., increases in core habitat, and decreases in TMRD and OMRD within several BMUs) within these recovery zones.

Construction or reconstruction of roads within grizzly bear core habitat would result in losses of core habitat and corresponding adverse effects to grizzly bears within the SRZ and CYRZ. It appears that the MIRR would allow the construction of roads within grizzly bear core habitat within BMUs in the SRZ and CYRZ, which would potentially have serious ramifications on the stability and recovery of the grizzly bear populations within these ecosystems. Approximately 136,917 acres of grizzly bear core habitat in the SRZ and 108,899 acres of grizzly bear core habitat in the CYRZ are contained in IRA MIRR themes, which equates to approximately 42 percent and 12 percent of the total core habitat in SRZ and CYRZ, respectively (Table 27).

However, as described in the project description, the potential for road construction/reconstruction to occur within grizzly bear core habitat overlapped by IRAs differs between individual MIRR themes. For example, under the WLR, PRIM, and SAHTS themes road construction/reconstruction is generally prohibited. Thus, even though the WLR theme overlays approximately 54,123 acres of grizzly core habitat in the SRZ and 10,340 acres in the CYRZ, grizzly bear core habitat in the WLR theme should not be affected by road construction or reconstruction. There is no overlap of the PRIM or SAHTS themes with grizzly bear core habitat within either the SRZ or CYRZ. The two MIRR themes under which grizzly bear core habitat could be impacted within the SRZ and CYRZ are the BCR and GFRG themes, as road construction and reconstruction are allowed under these two themes. Approximately 471 acres of grizzly bear core habitat in the SRZ and 11,719 acres of grizzly bear core habitat in the CYRZ are within the BCR theme; which equates to less than 1% of grizzly bear core habitat in the SRZ and approximately 1% of core habitat in the CYRZ. The GFRG theme contains approximately 7,992 acres of grizzly bear core habitat in the SRZ and 979 acres of grizzly bear core habitat in the CYRZ, which represents 2% of core habitat in SRZ and less than 1% of core habitat in CYRZ, respectively.

However, on August 7, 2008, the Forest Supervisor of the IPNF submitted a letter to the Service stating that, "*…I will defer decisions that would have a "likely to adversely affect" determination, except when the project is designed to provide long-term benefits to grizzly bears, until the Record of Decision for the Access Amendment is signed*" (McNair 2008) (Appendix C).

The intent of the Access Amendment is to provide a strategy to minimize the effects to grizzly bears resulting from motorized access into grizzly bear habitat on National Forest lands in the Selkirk and Cabinet-Yaak ecosystems. The Access Amendment will establish standards and guidelines pertaining to wheeled, motorized use within areas occupied by grizzly bears within these ecosystems. Implementation of the Access Amendment will contribute to the conservation and recovery of grizzly bears within the Selkirk and Cabinet-Yaak ecosystems. A ROD for the Access Amendment is anticipated in 2009.

Table 27. Overlap of grizzly bear core habitat with the Modified Idaho Roadless Rule themes, in the Selkirk and Cabinet-Yaak Ecosystems (after USFS 2008).

Recovery Zone	BMU	Total Core Habitat	Modified Idaho Rule Themes[1]					
			WLR	BC	BCR/CPZ	GF	SA	Total in IRA
Selkirk								
	Ball-Trout	41,439	12,216	17,571.07	0	4,938.63	0	76,164.7
	Blue-Grass	28,549	1559	9,698.31	0	0	920.65	40,726.96
	Sullivan-Hughes	47,857	4,067.79	1,965.76	0	0	4,900.17	58,790.72
	Kalispell-Granite	41,014	0	7,963.17	120.32	0	127.14	49,224.63
	Lakeshore	3,430	0	444.61	157.57	0	706.05	4,738.23
	Long-Smith	47,991	14,855.01	15,701.23	193.25	0	5,668.91	84,409.4
	Myrtle	37,055	13,905.16	6,543.31	0	3,054.08	196.62	60,754.17
	Salmo-Priest	57,492	7,519.42	0	0	0	1,923.49	66,934.91
	State Land	0.45	0.02	0.14	0	0	0.05	0.66
Totals			54,122.4	59,887.6	471.14	7,992.71	14,443.08	136,916.93
Cabinet-Yaak								
	Boulder	30,966	0	23,164.59	0.47	979.31	1,425.75	56,536.12
	Callahan	49,899	0	26,415.25	00	0	172.51	76,486.76
	Grouse	21,284	0	7,338.28	1,522.63	0	0	30,144.91
	Keno	30,138	0	4,698.83	356.13	0	0	35,192.96
	North Lightning	45,937	0	14,413.64	3,340.67	0	0	63,691.31
	Scotchman	39,080	10,340.32	4,622.02	6,498.99	0	1,295.65	61,836.98
	Spar	45,601	0	2,314.38	0	0	0	47,915.38
Totals			10,340.32	82,966.99	11,718.89	979.31	2,893.91	108,899.42

[1] There was no overlap with Primitive or SAHT; consequently, those themes are not included below.

Based on the August 7, 2008, letter from the IPNF Forest Supervisor , we assume that projects allowed pursuant to the MIRR will not involve the construction or reconstruction of temporary or permanent roads within grizzly bear core habitat within the SRZ or CYRZ unless the project is designed to provide long-term benefits to grizzly bears until such time as the ROD for the Access Amendment is signed. Therefore, for activities allowed under the MIRR, we do not anticipate adverse effects to grizzly bears within the SRZ and CYRZ as a result of road construction or reconstruction within grizzly bear core habitat prior to signature and completion of any appropriate section 7 consultation on the Access Amendment. This assumption is central to our effects analysis and biological conclusions. If this assumption is determined to be incorrect, consultation on the MIRR may need to be reinitiated to determine whether any site-specific action pursuant to the MIRR resulted in effects to grizzly bears that were not considered and analyzed in this biological opinion (50 CFR 402.16). Additionally, as potential effects to grizzly bears related to road construction or reconstruction within grizzly bear core habitat under the MIRR are not anticipated to occur until the Access Amendment ROD is signed, such potential effects to grizzly bears are not analyzed within the context of this analyisis. The potential road-related effects that may occur to grizzly bears under the MIRR will be fully evaluated within the analysis conducted with the Forest Service for the consulation on the Access Amendment. Furthermore, the potential for such future road-related effects to grizzly bears, once the Access Amendment ROD is signed, are anticipated to be fully consistent with the management direction

for grizzly bears within the SRZ and CYRZ prescribed by the Access Amendment. As noted previously, the Access Amendment ROD is anticipated to be completed in 2009.

A portion of the White Mountain IRA is contained within the PRA and the White Mountain IRA is overlapped by the BCR theme, under which road construction and reconstruction are allowed. The PRA is an area adjacent to the SRZ that has been delineated as receiving regular reoccurring use by grizzly bears. Some of the grizzly bears may have home ranges located entirely outside of the SRZ, while others may utilize habitats both within and outside of the SRZ. However, grizzly bear densities are lower in the area than they are within the SRZ. While core grizzly bear habitat has not been mapped and is not managed for in the PRA, the presence of grizzly bears in the area indicates that some bears have apparently acclimated to the existing conditions. Maintaining the existing roaded conditions within the PRA would most likely prevent displacing the grizzly bears that are utilizing the area. Compensating for road construction within unroaded areas of the PRA may include road management elsewhere in the PRA (i.e., restricting or closing existing roads). As grizzly bear densities are most likely lower in the PRA, relative to the SRZ, closing or restricting other existing roads within the PRA to compensate for road construction within currently unroaded portions of the PRA would provide secure areas for grizzly bears to be displaced to and utilize. The Service expects that the USFS's (specifically, the IPNF) commitment to avoid adverse effects to grizzly bears would extend to actions proposed under the MIRR within the PRA, and would, therefore, maintain the existing roaded conditions within the PRA (Table 21). Furthermore, for projects proposed in accordance with the MIRR other appropriate measures would be incorporated through site-specific, project-level consultations to reduce the potential for, or effects of, displacing grizzly bears from important seasonal habitat within the PRA. Maintaining existing road densities within the PRA, to which the grizzly bears have apparently acclimated, as well as incorporating other appropriate site specific conservation measures, will ensure that any grizzly bear displacement does not increase the risk of direct or indirect mortality of the bears.

Other factors beyond motorized access management can affect the effectiveness of grizzly bear habitat as well. The IGBC defined grizzly bear core habitat in terms of linear features (i.e., roads, trails) on the landscape that provide for or facilitate motorized access or high intensity non-motorized human activity (e.g., recreation), as they are one of the most influential factors affecting grizzly bear habitat security, which are easily defined and measurable. However, the IGBC recognized that controlling motorized access alone will not completely address grizzly bear habitat security. The Service's 1999 finding concluded that human intrusion into grizzly bear habitat is one of the factors contributing to the risk of grizzly bear extinction in the SRZ and CYRZ (Service 1999). Christensen and Madel (1982) determined that grizzly bears can be displaced from habitat impacted by high levels of human activity, such as mining, sustained helicopter flights, and high use recreational areas (i.e., campgrounds), and therefore, activities of this type must be considered when managing for effective grizzly bear habitat. A 1987 compendium of scientific research on grizzly bears documented that the bears avoid, and can be displaced from, areas impacted by point-source disturbances including, but not limited to, mining, hydrocarbon exploration and development, helicopter flights, and recreational developments and activity (IGBC 1987). Thus, projects undertaken pursuant to the MIRR may adversely affect grizzly bears through these other disturbance mechanisms, such as helicopter harvest and prescribed fire, which may not be associated with road construction/reconstruction.

Projects undertaken pursuant to the MIRR may involve timber harvesting. The Assessment projects that approximately 1,000 acres could be harvested annually across all of Idaho. Given the prohibitions and permissions associated with the MIRR themes, most of this projected harvest would take place within the GFRG theme. If all acres of harvest were concentrated in either the SRZ or CYRZ, this would affect less than 1 percent of the core habitat in either ecosystem on an annual basis. Over the course of 15 years, the Assessment projects that as many as 15,000 acres could be harvested. Due to the programmatic nature of this consultation, it is not possible to predict how many, if any, of the 15,000 acres of harvest would occur in the CYRZ or SRZ. However, because the purpose of the MIRR is to provide State-specific direction for the conservation and management of the 250 IRAs totaling 9.3 million acres (USFS 2008) distributed throughout the State of Idaho, it is highly unlikely that harvest activities would be concentrated in the CYRZ or SRZ.

If timber harvesting were to occur within grizzly bear core habitat within the SRZ or CYRZ under the MIRR, it would most likely involve helicopter harvesting or winter logging, at least until the ROD for the Access Amendment is signed; ground-based harvesting operations would require road construction resulting in the loss of grizzly bear core habitat and adverse affects to grizzly bears, which the IPNF has committed to deferring. Helicopter logging activities in grizzly bear core habitat can affect grizzly bears resulting in their displacement.

Helicopter logging does not pose the same long-term displacement effects and increased mortality risk to grizzly bears as roads do. Helicopter logging is transitory and does not bring additional human use into grizzly bear habitat, whereas roads are generally longer term or permanent features on the landscape and facilitate human access into grizzly bear habitat. Helicopter logging may, however, result in short-term adverse impacts to grizzly bear core habitat because the ability of the area to function as grizzly bear core habitat is compromised, and grizzly bears are likely to be displaced from the area during the time the helicopter logging operations are on-going. Thus, while helicopter logging within grizzly bear core habitat may not necessarily require a deduction in core habitat (unlike road construction within grizzly bear core habitat, which does require a deduction in the core habitat calculations), the potential temporary adverse displacement effects to grizzly bears associated with helicopter logging within grizzly bear core habitat must be considered. Repeated helicopter flights less than 1,500 feet in altitude are considered to result in grizzly bear displacement on the ground (Service 2004b).

As described previously, the nutritional demands of female bears with cubs is triple that of other bears, making their access to nutritional food sources and uninterrupted feeding essential during spring and fall (Jonkel 1982 *In*: Frederick 1991). Thus, similar to the potential displacement effects upon grizzly bears resulting from roads, the potential displacement effects associated with helicopter logging within grizzly bear core habitat, and especially spring grizzly bear habitat, can also influence indirect mortality risk by disrupting efficient foraging strategies resulting in nutritional stress, restricting reproduction and dispersal, and potentially reducing carrying capacity. The disturbance effects of the timber harvest are likely to be temporary, but depending on the experience of individual grizzly bears, the impact could result in long or short-term avoidance of the area harvested, including the influence zone surrounding the harvest units.

However, the IPNF has committed to deferring projects that would be implemented under the MIRR and that would have adverse affects to grizzly bears, except when the project is designed to provide long-term benefits to grizzly bears, until the ROD for the Access Amendment is signed. It is difficult to conceive of a helicopter logging project that would be designed to achieve the objectives of the MIRR and that would at the same time also result in improved habitat conditions for grizzly bears. An example might be a project that would reduce wildland fire risk by reducing fuel loading through overstory canopy removal, which would promote understory shrub development increasing the foraging opportunities for grizzly bears. Such a project could include timing constraints to minimize the potential for displacement of grizzly bears from important seasonal habitats. Limiting the timing and duration of helicopter use within grizzly bear core habitat may reduce the potential for displacement of, and effects to, grizzly bears that may result from the harvest activities. These types of measures, as well as other appropriate measures, would be incorporated through site-specific, project-level consultations to reduce the potential for, or effects of, displacing grizzly bears from important seasonal habitat within grizzly bear core habitat for projects that are proposed in accordance with the MIRR. Incorporating appropriate site-specific conservation measures will ensure that any adverse displacement effects are short-term in nature (e.g., temporary) and do not have any potential to result in direct or indirect mortality of grizzly bears.

When allowed under the LRMP, the use of prescribed fire as a management tool would be available across all themes as the MIRR does not require, limit or prohibit the use of prescribed fire. Fire in grizzly bear habitat can be beneficial or detrimental depending on when and where it occurs, and the scale (number of acres burned) at which it occurs. In general, fire is thought to have a positive effect on grizzly bear habitat, and the decline of grizzly bear populations has been attributed to fire suppression (Willard and Herman 1977; Tirmenstein 1983; Contreras and Evans 1986). Grizzly bears are opportunistic species with large home ranges, and their populations change little in response to fire (Smith 2000). Fires promote and maintain many important berry-producing shrubs and forbs and provide a medium for insects and carrion (primarily in the instance of very large fires). However, fire can also affect other food sources, such as whitebark pine nuts. Although grizzly bears generally benefit from periodic burns because of improved habitat quality, a very large burn could destroy a large percentage of available habitats resulting in habitat fragmentation.

As for most species, the effects of fire on grizzly bears are highly dependent on numerous factors that are difficult to predict for this analysis. It is generally agreed that historically wildfire was the primary disturbance factor in the SRZ and CYRZ. In the past, fire has destroyed grizzly bear cover and food and has altered habitat. Although such disturbances may not have a major impact when a large acreage of habitat is available, in the present conditions of limited, fragmented habitat, a fire could burn a large percentage of the remaining available habitat. This potential effect can be minimized by implementing projects designed to prevent stand-replacing and uncontrollable wildfires.

Grizzly bears occupy large areas of suitable habitat. Shrub and grass communities interspersed within the wooded areas provide seasonal foraging opportunities for grizzly bears. Implementation of prescribed burning within the IRAs to maintain grass and shrub communities can maintain or increase grizzly bear foraging opportunities However, individual grizzly bears

could be adversely affected depending on size (number of acres treated) and timing (season) of implementation of prescribed fire projects undertaken pursuant to the MIRR. Although it is possible that some fire-related mortality of grizzly bears occurs, it is thought to be rare and unlikely to have a substantial impact on the grizzly bear population as a whole (Blanchard and Knight 1991). Methods to avoid conflicts with grizzly bears may include the use of seasonal timing constraints to avoid burning grizzly bear habitat during the season of grizzly bear use. These types of measures, as well as other appropriate measures, would be incorporated through site-specific, project-level consultations to reduce the potential for, or effects of, displacing grizzly bears from important seasonal habitat within grizzly bear core habitat for prescribed fire projects that are proposed in accordance with the MIRR.

Discretionary mining activities would be allowed under the MIRR. However, new road construction and reconstruction associated with development of geothermal, oil, or gas reserves is prohibited in roadless areas under the MIRR regardless of theme. Surface use and occupancy in the BCR and GFRG themes would be permitted if allowed in the LRMP. There are no known oil and gas deposits on the IPNF, and geothermal energy potential is very low. As such, little commercial interest in leasing for such resources is anticipated as development would essentially be precluded in the absence of new roads and there is low potential for the resource. Activities related to phosphate leasing in IRAs would be restricted to areas in and adjacent to specific Known Phosphate Leasing Areas (KPLAs) on the Caribou portion of the Caribou-Targhee National Forest. Consequently, the likelihood that discretionary mining activities will take place in IRAs related to discretionary mining on the IPNF is exceptionally low.

D. Cumulative Effects

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

- The action area for the MIRR consists of IRAs (see definition in Section II of the Assessment), most of which are unlikely to contain significant inholdings given their current roadless character and thus effects on such intervening non-Federal lands are unlikely;
- Given the broad scope of this Federal Action, it is not possible to determine specific state, private or local government legislation, administrative rules, or policy initiatives that would be reasonably certain to occur in IRAs.

E. Conclusion

After reviewing the current status of the grizzly bear, environmental baseline, effects of the proposed MIRR, and cumulative effects, it is the Service's biological opinion that the proposed MIRR would not have adverse affects in the SRZ or CYRZ such that recovery of the grizzly bear would be precluded. As the BRZ is currently unoccupied, the proposed MIRR will have no effect on the status of the BRZ. Also because the NCDRZ, NCRZ, and YRZ are outside the action area of the proposed MIRR, it will have no direct effects upon status of grizzly bears in

those ecosystems. Therefore, because the proposed MIRR will not preclude recovery and survival in any Recovery Zone, it is the Service's opinion the proposed MIRR will not jeopardize the listed grizzly bear population in the conterminous United States. No critical habitat has been designated for this species, therefore, none will be affected. Our conclusion is based on the following rationales:

1. Future projects proposed under the MIRR are subject to existing LRMP standards and guidelines that govern the management of activities within grizzly bear habitat. Additionally, the USFS is committed to complying with the Service's 2001 BO on the IPNF's LRMP. The 2001 BO stipulates terms and conditions to minimize the effects to grizzly bear that may result from activities implemented by the IPNF within the SRZ and CYRZ.

2 .The USFS (IPNF, Forest Supervisor) made a commitment to the Service to defer decisions within the SRZ and CYRZ that would have "likely to adversely affect" determinations (except when the projects are designed to provide long-term benefits to grizzly bears), until the ROD for the Access Amendment is signed.

3. The USFS will be required to consult with the Service on future actions proposed under the MIRR that have the potential to affect grizzly bears. Future projects with the potential to adversely affect grizzly bears, will be required to incorporate site-specific conservation measures to ensure that any such adverse effects are short-term in nature (e.g., temporary displacement) and do not have any potential to result in direct or indirect mortality of grizzly bears.

F. Incidental Take Statement

Due to the general nature of the proposed action, the *Effects of the Action* section of this document does not analytically support a finding that incidental take of the grizzly bear is likely to occur as a result of the proposed action. For that reason, any appropriate take exemption is deferred to the results of future section 7 analysis of individual or batched actions taken in accordance with the MIRR. The mere potential for future take is not a legitimate basis for providing such an exemption. Subsequent consultation, as appropriate, on specific actions developed pursuant to the MIRR and relevant provisions of LRMPs will serve as the basis for determining if an exemption from the section 9 take prohibitions is warranted. If so, the Service will provide Reasonable and Prudent Measures and Terms and Conditions, as appropriate, to minimize the impacts of the taking on the grizzly bear in accordance with 50 CFR 402.14(i).

G. Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends that the IPNF:

1. Continue working with the IGBC to develop and implement a Food Storage Order to reduce the potential for grizzly bear/human conflicts. It would be prudent to implement such an order within the administrative boundaries of the Forest. Improperly stored food and garbage leads to food conditioned and habituated grizzly bears that generally result in their direct mortality or management removal. Attraction of grizzly bears to improperly stored food and garbage is identified by the Recovery Plan as one of the principal causes of grizzly bear mortality, and has been the ultimate reason for several mortalities of grizzly bears within the CYRZ and SRZ;

2. In coordination with the Service and the Colville NF, evaluate for reconfiguration the BMUs that border the two Forests. Specifically, evaluate the appropriateness of reconfiguring the Salmo Priest, Sullivan-Hughes, Kalispell-Granite, and Lakeshore BMUs to more closely approximate the home range size of female grizzly bears within this Selkirk ecosystem (i.e., approximately 100 mi^2);

3. Conduct a moving windows analysis in the areas of grizzly bear occupancy outside of but adjacent to the SRZ and CYRZ to better assess the potential effects of road densities upon grizzly bears in these areas;

4. Within linkage areas, provide for landscape connectivity by participating in the development and implementation of a management plan to protect and restore habitat connectivity within these areas on federal lands;

5. Plan recreational development, and manage recreational and operational uses to provide for grizzly bear movement, and to maintain the effectiveness of grizzly bear habitat;

6. Identify and prioritize roads for reclamation or seasonal restrictions within watersheds exceeding > 2 mi/mi^2 of open road density to improve habitat quality and/or security for grizzly bears, as well as other listed and non-listed fish and wildlife species.