CHAPTER II. BIOLOGICAL OPINION FOR GRIZZLY BEARS

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A. CONTEXT OF THE PROPOSED ACTION FOR GRIZZLY BEARS

The proposed action is described in detail in Chapter I of this biological opinion.

This section identifies the action area for the proposed action. Next this section describes the guidelines and standards that provide conservation for grizzly bears when actions are carried out under the Proposed Action (i.e., the Revised Plan). Section B. of this biological opinion describes the status of the grizzly bears. Section D. describes the baseline condition of the grizzly bears populations and their habitat in the action area. Section E. provides an analysis of the effects of the proposed action on the grizzly bears. This is followed by our conclusion, incidental take statement, reiniation notice, and literature considered in the biological opinion. This opinion will consider the effects of implementation of the proposed framework of the Revised Plan as well as the effects of proposed measures to be implemented at the project level. However, this biological opinion does not provide a detailed analysis for effects of specific projects. Future projects undertaken by the USFS will undergo detailed, site-specific analysis for effects on listed species.

1. Action Area

The "action area" includes all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action [50 CFR §402.02]. The action area does not necessarily include all areas potentially frequented by far-ranging, or migrant, species (USFWS and NMFS 1998, pp. 4-15 to 4-19).

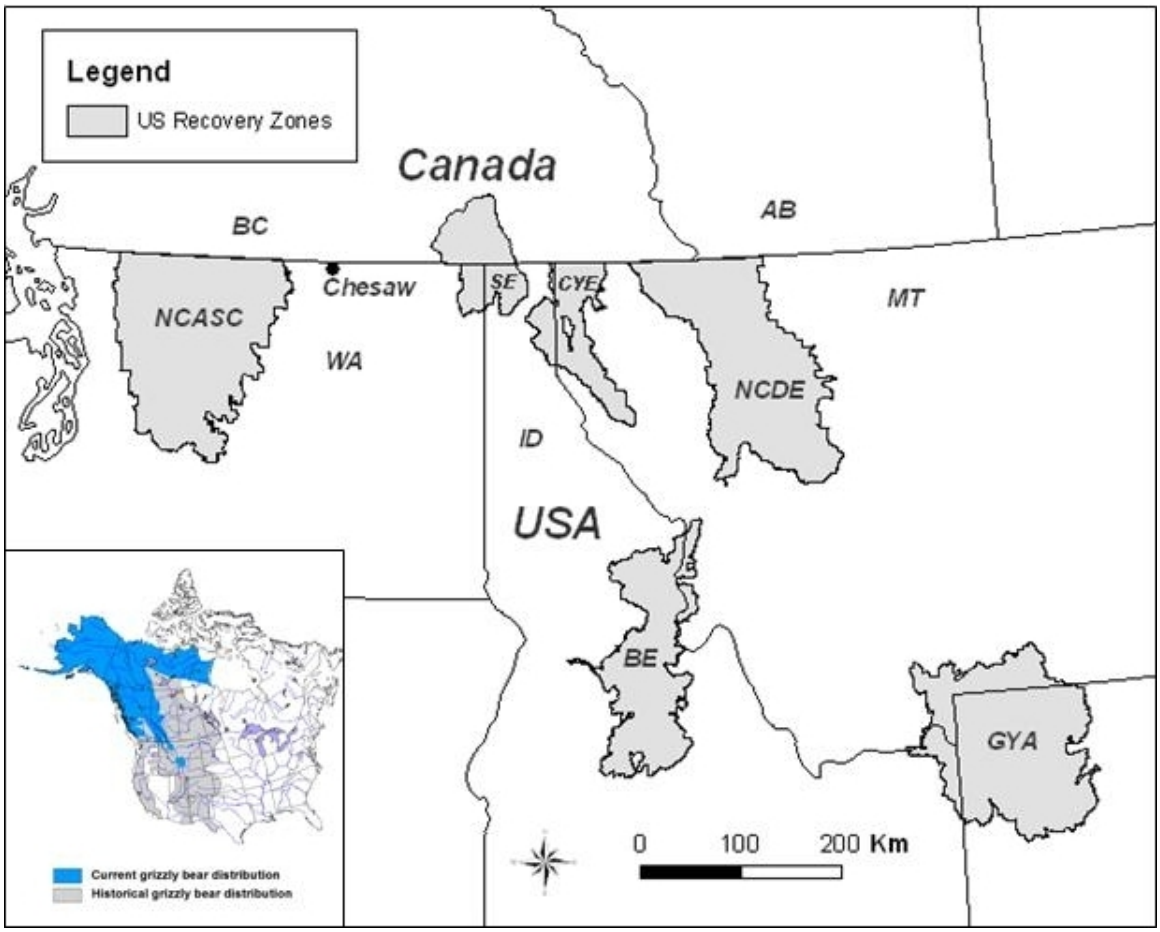
The Recovery Plan prompted the identification of six grizzly bear recovery zones (Figure II-1), defined as areas within which the population and habitat criteria for achievement of recovery will be measured (USFWS 1993, p. 33): CYE, NCDE, Selkirk Ecosystem (SE), Bitterroot Ecosystem (BE); North Cascades Ecosystem (NCASC), and Yellowstone Grizzly Bear Ecosystem (YGBE). As previously described in Chapter I, two grizzly bear recovery zones overlap the IPNF: the CYE and the SE. The CYE is situated in the KNF, IPNF, and a small portion of the Lolo National Forest. The SE is situated in the IPNF, Colville National Forest (CNF), and British Columbia, Canada.

In some areas, grizzly bears associated with the CYE and SE have been consistently documented in places outside the boundaries of the CYE and SE. These land areas are referred to as "bears outside recovery zone" (BORZ) areas and are characterized by recurring use by grizzly bears (USFS 2011d, p. 11; Figure II-2). Grizzly bears may also be observed infrequently on other areas of the IPNF outside the recovery zones and BORZ areas. Therefore, the action area is the entire IPNF.

After grizzly bears were listed under the ESA, the Interagency Grizzly Bear Committee (IGBC) was established to develop guidelines for bear management (see IGBC 1986). The National Forests, Bureau of Land Management, and National Parks, in coordination with the Service, delineated bear management units (BMUs) within each recovery zone to aid in managing habitat and monitoring population trends and to apply the recommendations of the IGBC. In the CYE and SE recovery zones, BMUs approximate the annual home range size of adult females (from 50 to over 150 square miles). The BMUs and are not intended to depict the actual location of

female home ranges on the landscape. Rather, the BMUs were identified to delineate analysis areas of the appropriate size for considering land use effects upon grizzly bears, to provide enough quality habitat for home range use, and to ensure that grizzly bears were well distributed across each recovery zone.

Figure II-1. Current and historic grizzly bear range and location of recovery ecosystems (In USFWS 2011a, p. A-11).



- Inset map illustrates historic (grey shade) and current grizzly bear distribution (dark blue). Adapted from Proctor et al. (in review),
- GYA = Greater Yellowstone Area; NCDE = Northern Continental Divide Ecosystem; CYE = Cabinet-Yaak Ecosystem; SE = Selkirk Ecosystem; BE = Bitterroot Ecosystem; NCASC = North Cascades Ecosystem.

2. Relationship of the Proposed Action to Existing Management

Current management of grizzly bear habitat is prescribed by the 1987 Forest Plan (existing plan) and the Interagency Grizzly Bear Committee (IGBC) was established to develop guidelines for bear management (see IGBC 1986).

Under the existing plan, the IPNF applies the Guidelines of the IGBC (USFS 1986, entire) across the grizzly bear Management Situations (MS) (1 through 5) as delineated throughout the two recovery zones in the IPNF. All of the lands within each recovery zone have been delineated into one of two management situations: MS1 or MS3. As information and science related to grizzly bears evolved, the USFS began managing MS1 and MS2 essentially the same on NFS lands, according to direction for MS1. In MS1, management focuses on grizzly bear habitat maintenance and improvement and the minimization of grizzly-human conflict and management decisions are expected to favor the needs of the grizzly bear when grizzly habitat and other land use values compete. MS3 lands include private lands, campgrounds, or other lands where grizzly bear presence and factors contributing to their presence will be actively discouraged. The IGBC Guidelines list eight elements on how to minimize grizzly bear-human conflict potential as it relates to wildlife management (USFS 1986, pp. 6-7). If the guidelines are met, then the management direction for each management situation is met.

The IPNF also implements the recently completed Forest Plan Amendments for Motorized Access Management within the SE and CYE Grizzly Bear Recovery Zones on the Kootenai, Idaho Panhandle, and Lolo National Forests (Grizzly Bear Access Amendment or Access Amendment [USFWS 2011a, entire]). The Grizzly Bear Access Amendment established standards for core, open motorized route density (OMRD) and total motorized route density (TMRD) for each BMU in the CYE and SE. Route densities include both roads and motorized trails. The road density standards are derived from the research of Wakkinen and Kasworm (1997, pp. 22-25). Based on these findings, the mix of roaded, semi-roaded, and core areas are likely to provide adequate habitat that provide for breeding, feeding, and sheltering activities for grizzly bears, especially females (USFWS 2011a, p. A-65). The Grizzly Bear Access Amendment also limits linear miles of open or total permanent roads to the existing baseline conditions in BORZ.

In 2008, the Idaho Roadless Rule (IRR) (36 CFR 294 Subpart C) was finalized and designated 797,100 acres of the IPNF as Inventoried Roadless Areas. The 2008 IRR effectively modified where timber production, road construction, and mineral activities could occur in some of the original 1987 Forest Plan management area (MA) allocations. The IRR specifically added restrictions on and allowances for activities in several of the MAs in the existing plan overlapping inventoried roadless areas (IRAs). Briefly, the restrictions added by the IRR include additional prohibitions on road construction, timber harvest, and mineral leasing in existing plan MA1b,c,e; additional limited allowances for roads in MA5; additional allowances for roads and timber harvest both within and outside community protection areas in MA5; conditions on road construction and timber harvest associated with mineral leasing and the applicable land management plan in MA6; and direct that MA2a,b, 3, and 4a should be managed in accordance with the applicable land management plan.

3. Proposed Action Description

As described in Chapter I, the Revised Plan direction is organized by goals, desired conditions, objectives, guidelines, and standards. The Revised Plan Forest-wide direction describes the framework under which lands will be managed for the next 10 to 15 years on the Forest.

The Revised Plan desired conditions for wildlife and vegetation and guidelines and standards for wildlife are discussed in Chapter I and contained in Appendix B of the Terrestrial BA (USFS 2013a). Guidelines and standards are the procedures and requirements (respectively) applied to project and activity decision-making to achieve goals, desired conditions, and objectives. All project-level activities must meet the guidelines and standards. The project-level requirements that provide conservation of grizzly bears are described in Table II-1. The guidelines and standards address the following grizzly bear management needs: linkage, access, general habitat, human-bear conflicts, and denning habitat.

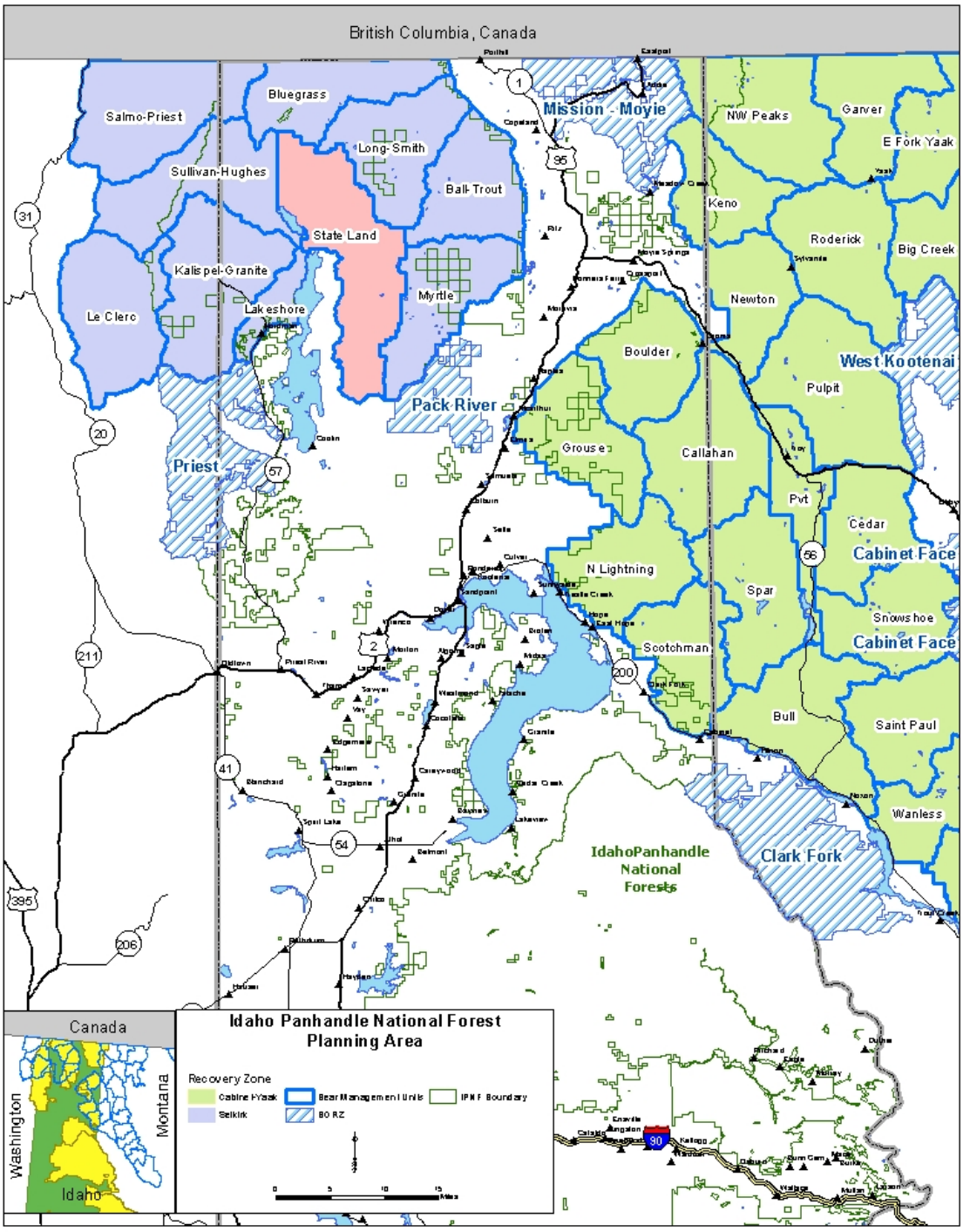


Figure II-2. Bear Management Units (BMUs) and Bears Outside Recovery Zones (BORZ) in relation to the Idaho Panhandle National Forest boundary.

Table II-1. Guidelines and standards in the IPNF Revised Plan for grizzly bear conservation.

Grizzly Bear Management Need	Element[1] Code	Element Description
Linkage	FW-GDL-WL-15	Sets direction for interagency coordination and inclusion on wildlife crossing features in roadway construction and reconstruction.
Linkage	FW-GDL-WL-16	Restricts management activities within one-quarter mile of existing crossing features, and future crossing features.
Linkage	FW-GDL-WL-17	Maintains federal ownership in wildlife linkages identified through interagency coordination.
General Habitat	FW-GDL-WL-18	Applies "Interagency Grizzly Bear Guidelines," or a conservation assessment once a grizzly bear population is delisted. .
Access Management / Secure Habitat	FW-STD-WL-02.	Applies the Access Amendment direction in the CYE and SE.
Human-Bear Conflict	FW-STD-WL-03.	Requires sanitation measures to reduce human/wildlife conflicts and mortality in all permits and operating plans.
Denning Habitat / Human-Bear Conflict	FW-STD-WL-04.	Prohibits grooming of snowmobiles routes in grizzly bear core habitat in spring after April 1 each year.

1. Elements of the plan include the Goals, objectives, desired conditions, guidelines and standards.

The standards and guidelines discussed in Chapter I, Appendix A of this biological opinion and Table II-1 would be applied forest-wide as well as across MAs and geographic areas (GAs). Each of the twelve management area designation has its own prescription for management and allowed uses. Table I-4 in Chapter I describes the allocation of all National Forest Systems (NFS) lands across the MAs. The distribution of the CYE and SE recovery zones to the MAs is provided in Table II-2.

Table II-2. Distribution and percent of CYE and SE recovery zone acreages on the IPNF across the designated management areas under the Revised Plan.

Proposed Action Management Areas	Acres[1] in the SE (%)	Acres in the CYE (%)
1a – Wilderness	9,882 (3)	0
1b – Recommended Wilderness	55,418 (14)	24,540 (10)
1c – Wilderness Study Area	0	0
1e – Primitive Lands	18,564 (5)	0
2a – Wild & Scenic Rivers (Wild & Recreational)	0	0
2b – Eligible Wild & Scenic Rivers (Wild &	7,035 (2)	883 (<1)
3 – Special Areas	4,975 (1)	4,600 (2)
4a – Established & Proposed Research Natural	4,651 (1)	2,737 (1)
4b – Experimental Forests	0	0
5 – Backcountry	118,839 (31)	82,719 (33)
6 – General Forest	164,353 (43)	133,103 (54)
7 –Primary Recreation Areas	839 (<1)	0
Total:	384,446	248,582

[1]Where special designation MA's overlap, acre calculation based on primary MA, following the hierarchy listed in the Plan

Geographic areas have desired conditions that are specific to a locale, such as a river basin or valley. The GA desired conditions were developed to refine Forest-wide management to better respond to local conditions and situations that may occur within a specific GA. The desired conditions in GAs for listed species will not exert additional effects on the species, rather the desired condition will help the Forest achieve a Forest-wide desired condition, objective, standard, or guideline for the species. This is done within the GAs by identifying or prioritizing areas where these conditions should be achieved. For example, a desired condition for wildlife in the Pend Oreille GA provides low levels of disturbance for grizzly bear denning in the Scotchman Peaks and Selkirk Mountain ranges. This condition complements Forest-wide desired condition for wildlife (FW-DC-WL-04), which states that low levels of disturbance exist in all grizzly BMUs to facilitate denning activities, spring use, limit displacement, and reduce human/bear conflicts and potential bear mortality and Forest-wide guideline (FW-GDL-WL-01**)** which states that management activities on NFS lands should avoid/minimize disturbance in areas of predicted denning habitat during spring emergence (April 1 through May 1). In these examples, the GA desired conditions are identifying specific locations where the Forest-wide desired condition and guideline will be targeted.

The Revised Plan incorporates the recently completed Grizzly Bear Access Amendment as well as the IGBC Guidelines (IGBC 1986). As described in Appendix E to the draft Revised Plan (USFS 2011a), where the IRAs overlap the Revised Plan MA designations, the provisions of the IRR prevail.

B. STATUS OF THE GRIZZLY BEAR

1. ESA Listing Status

In 1975, the Service listed the grizzly bear as a threatened species in the contiguous United States (U.S.) (40 FR 31734-31736, July 28, 1975). The Service subsequently developed a grizzly bear recovery plan in 1982, and revised it in 1993 (USFWS 1993, entire).

Since the original listing of the grizzly bear, the Service has completed 4, five-year status reviews (46 FR 14652, February 27, 1981; 52 FR 25523, July 7, 1987; 56 FR 56882, November 6, 1991; and September 6, 2011). None of these reviews resulted in a change in the listing status of the grizzly bear. Since then, the Service has undertaken a number of actions to review the status of individual grizzly bear populations.

On March 13, 1990, the Service received a petition requesting the grizzly bear in the North Cascades Ecosystem (NCASC) be reclassified from threatened to endangered. We made a positive 90-day finding on the petition and initiated a status review of the NCASC grizzly bear population (55 FR 32103, August 7, 1990). On January 28, 1991, we received a petition requesting that we reclassify grizzly bear populations in the CYE, SE, and the Northern Continental Divide Ecosystem (NCDE) from "threatened" to "endangered." Then, on February 4, 1991, we received a petition requesting that grizzly bear populations in the SE, CYE, Yellowstone Grizzly Bear Ecosystem (YGBE) and NCDE recovery zones be reclassified from threatened to endangered. In 1992, we made a positive finding on these 2 petitions regarding the CYE and SE and initiated a status review for these 2 ecosystems (57 FR 14372, April 20, 1992). This same finding found that there was not substantial information presented about the YGBE or NCDE recovery zones and that the request to uplist the North Cascades Ecosystem population was already being addressed through initiation of a status review in 1990 (see 55 FR 32103, August 7, 1990).

In July 1991, the Service released a 12-month finding that reclassification of the population from threatened to endangered was warranted but precluded (56 FR 33892, July 24, 1991). In 1993, we published a 12-month finding that the grizzly bear population in the CYE was warranted for uplisting to endangered status while the population in the SE was not (58 FR 8250, February 12, 1993). This warranted status for the CYE, like the North Cascades Ecosystem population, was determined to be precluded by higher priority actions. In 1998, we re-affirmed this position, publishing a notice that the North Cascades population and the CYE populations are warranted for endangered status, but precluded by higher priority actions (63 FR 30453, June 4, 1998). In 1999, after a Court remanded our finding regarding the SE population back to the Service, we released a 12-month finding that both the CYE and the SE populations were warranted for endangered status but precluded by higher priority actions (64 FR 26725, May 17, 1999). Since then, the North Cascades Ecosystem, SE, and CYE populations have remained warranted for reclassification from threatened to endangered status but precluded by higher priority actions (64 FR 57534, October 25, 1999; 66 FR 54808, October 30, 2001; 67 FR 40657, June 13, 2002; 69 FR 24876, May 4, 2004; 70 FR 24870, May 11, 2005; 71 FR 53756, September 12, 2006; 72 FR 69034, December 6, 2007; 73 FR 75176, December 10, 2008; 74 FR 57804, November 9, 2009).

2. Species Description, Life History, Population Dynamics

Much of the following information is summarized from the grizzly bear recovery plan (USFWS 1993, pp. 5-8).

Grizzly bears are large (averaging 400-600 lbs. for males, and 250-350 lbs. for females) and long-lived (up to 40 years old) (Blanchard 1987, p. 102) but usually no more than 15-25 years in the wild. Grizzly bears are omnivorous, opportunistic feeders that require caloric intake in excess of maintenance requirements, particularly in later summer and fall, in order build fat levels to survive denning.

Generally solitary, grizzly bears avoid one another, except during the mating season when male and female bears tolerate one another. Grizzly bears do not defend territories, but instead have home ranges they share with other grizzly bears, although social systems influence movements and interactions among resident bears. Home range sizes for adult female grizzlies vary from 50 to 150 square miles; an adult male can have a home range size as large as 600 square miles (Servheen 1983, p. 1026).

Grizzly bears in the contiguous U.S. spend 5 to 6 months in dens, typically beginning in October or November (Craighead and Craighead 1972, p.6). The bears hibernate for as long as 7 months. During this period, they do not eat, drink, urinate, or defecate. Over the course of the denning season, a bear may lose 30 percent of its body weight. All of this weight is stored as fat, which is acquired during the 2 to 4 months prior to entering dens. During the pre-denning period, bears increase their food intake dramatically and may gain as much as 3.64 pounds per day (Craighead and Mitchell 1982, p. 544). The "active bear year" (time when a grizzly bear is active – i.e. not in the den) differs slightly between the U.S. portions of the SE and CYE populations. Research on radio-collared bears has demonstrated that most bears in the U.S. portion of the SE are active between April 1 and November 15th. Similarly, Cabinet-Yaak grizzly bears are active between April 1 and November 30th (Johnson et al. 2008, pp.1-2). In the U.S. portion of the CYE, den emergence for female grizzly bears ranged from the third week of March to the third week of May and peaked between the 2nd and 4th weeks of April (Kasworm et al. 2010, p. 58-59, Figure 50). Den emergence for male grizzly bears ranged from the 4th week of March to the 4th week of April and peaked between the first and second weeks of April (ibid, p. 58-59, Figure 50). In the U.S. portion of the SE, den emergence dates have not been identified because funding limitations restrict the ability to monitor during this time period (W. Wakkinen 07/01/2013 pers. comm.). In the U.S. portion of the CYE, female grizzly bears entered their dens between the third week of October and the second week of December (Kasworm et al. 2010, pp. 58-59, Figure 51). Male grizzly bears entered their dens between the first week of November and the 4th week of December (ibid, pp. 58-59, Figure 51). Grizzly bears in the Cabinets Mountains generally entered dens at least 2-3 weeks earlier than bears in the Yaak river drainage (ibid, p. 58). In the U.S. portion of the SE, female grizzly bears entered their dens between the first week of October and the second week of November. Male grizzly bears entered their dens between the second week of October and the third week of November. Overall, 93 percent of the monitored bears in the U.S. portion of the SE denned on or prior to November 18th (W. Wakkinen 07/01/2013 pers. comm.). Mating occurs from May through July, and cubs are born inside the den in late January

or early February. Cubs remain with their mother for 2 to 3 years (Schwartz et al. 2003, p. 564). The age at which females produce their first litter varies from 3 to 8 years, with litter size varying from one to four cubs. Grizzly bears have one of the lowest reproductive rates among terrestrial mammals. Grizzly bear females cease breeding successfully some time in their mid to late 20s (ibid, pp. 109-110).

3. Habitat Requirements

Grizzly bears are opportunistic omnivores and will eat fish, berries, grasses, leaves, insects, roots, carrion, small mammals, fungi, nuts, and ungulates. The bears are selective in their seasonal use of various kinds of forage and, therefore, move across the landscape as they follow the growth and abundance of preferred forage items (Mace et al. 1996, p. 1403; McLellan et al. 1999, p. 912, Kasworm et al. 2010, p. 64).

Grizzly bears are habitat generalists. Basic habitat requirements include the availability of food, water, security (from humans and other bears), and den sites (Mace et al. 1996 p.1403, 1999, pp. 374-376; Linnell et al. 2000, p. 346) (Table II-3). While biologists agree that preferred habitats of grizzly bears are early seral, fire-successional types, the proximity of hiding cover is also an important variable that has been shown to influence the use of foraging habitat. Given equal foraging opportunities, under cover and in the open, bears prefer to feed under cover.

Grizzly bears are selective in their seasonal use of various kinds of forage and, therefore, move across the landscape as they follow the phenological development and abundance of their preferred forage items. As a result, the productivity of grizzly bear populations is likely more strongly influenced by the availability of high quality food resources than by density-dependent regulating factors (IGBC 1987, pp. 51-59). It has also been observed that grizzly bears of all ages will congregate readily at plentiful food sources and form a social hierarchy unique to that grouping of bears (Hornocker 1962, Craighead 1979, *In* USFWS 1993, p. 2).

Table II-3. Grizzly bear key habitat requirements (In USFWS 2011a, p. A-3).

Habitat Requirement	Key Habitats
Spring foraging[1]	Low-elevation mesic vegetation
Summer, autumn foraging[1]	Moderate- to high-elevation mesic vegetation
Security cover and isolation from humans[2,3]	Cover provided by vegetation and topographic breaks; absence or low density of roads and trails
Denning habitat[4]	Remote, high-elevation areas with slopes greater than 30 degrees; friable, deep soils; and snow accumulations

Sources:
1 Mace et al. (1996); Mace et al. (1999); McLellan and Hovey (2001); Nielson et al. (2002); Waller and Mace (1997).
2 Archibald et al. (1987); Kasworm and Manley (1990); Mace et al. (1996); Mace et al. (1999); Mattson et al. (1987); McLellan and Shackleton (1988,1989); Wielgus et al. (2002).
3 Mace and Waller (1997); White et al. (1999); Graves (2002).
4 Pearson (1975); Servheen (1981); Zager and Jonkel (1983); Podruzny et al. (2002).

With the exception of a few forest vegetation types, the majority of vegetative food items preferred by grizzly bears occur in early seral communities where forest cover is absent or relatively sparse (Servheen 1983, pp. 1030-1031). Foraging areas that are consistently described in the literature as favored by bears include avalanche chutes (Mace et al. 1996, p. 1395; Waller and Mace 1997, p. 1034; Ramcharita 2000, p. 27; McLellan and Hovey 2001, p. 97), fire-mediated shrub fields (McLellan and Hovey 2001, p. 97), and riparian areas (Servheen 1983, p. 1082; McLellan and Hovey 2001, p. 97; Kasworm et al. 2010, p. 65). Avalanche chutes may be used at any time of year, but seem to attract bears particularly in the spring. These areas are usually quite wet (due to deep snows that melt later than in other areas), and they contain both valuable forage species and a tangle of vegetation that provides visual screening. Fire-mediated shrub fields often contain soft-mast (e.g., berry) producing shrub species, an important food source for foraging bears in mid-summer and early fall. Riparian areas are primarily used in spring and early summer when habitats at higher elevations are still covered with snow or plant growth is otherwise delayed. Riparian areas provide a variety of key forbs and grasses, and complex tree and shrub structure offering hiding cover.

When bears emerge from their dens in the spring, their fat stores have been severely depleted; therefore, foraging to rebuild energy reserves is their primary focus. It is important that bears have adequate spring foraging opportunities close to their dens, especially when cubs have been born, to build up fat stores quickly.

Food habits not only vary between seasons but also between the recovery zones. Radio collared grizzly bears in the Cabinet Mountains and Yaak River made greatest annual use of closed timber, timbered shrubfields, mixed shrub snowchutes, mixed shrub/cutting units, alder shrubfields, huckleberry shrubfields, and graminoid and beargrass sidehill parks (Kasworm et al. 2010, p.59). Grizzly bears in Cabinet Mountains made greater use of mixed shrub snowchutes, alder shrubfields, huckleberry shrubfields, and beargrass sidehill parks whereas grizzly bears in the Yaak River used closed timber, timber, timbered shrubfields, mixed shrub/cutting units, and graminoid sidehill parks (Kasworm et al. 2010, p.59).

In the SE, grizzly bears rely primarily on newly emerging vegetation, either in south-facing avalanche chutes or low elevation areas like Bismark Meadows, Hughes Meadows, and the Kootenai Valley on the eastern side of the ecosystem (W. Wakkinen 07/01/2013 pers. comm.). The distribution of grizzly bears in the SE varies each year, depending on snow pack and spring conditions. For example, in 2013, very few bears were documented in low elevation areas, likely due to sufficient green-up at moderate elevations following den emergence. This was confirmed by collared bears and the lack of bears in low elevation locations where they have been previously documented (ibid). In July, the SE grizzly bears begin eating available berries. Thimbleberry is an early emergent, but huckleberries are the largest food source for SE grizzly bears from July until October. Grizzly bear distribution changes elevation (low to high) and aspect (south to north) as the berry season progresses (ibid). Grizzly bears in the SE will take advantage of winter killed ungulates; however these are opportunistic events since there are no concentrated ungulate winter ranges in the SE. Also, there aren't sufficient fish runs, moth irruptions or white bark pine ecosystems to provide alternate grizzly bear food sources in the SE (ibid).

In the GYA, four food sources have been identified as important to grizzly bear survival and reproductive success (Mattson et al. 1991a). Winter-killed ungulates serve as an important food source in early spring before most vegetation is available (Green et al. 1997, p. 140; Mattson 1997, p. 165). During early summer, spawning cutthroat trout (*Oncorhynchus clarki*) are a source of nutrition for grizzly bears in the Yellowstone population (Mattson et al. 1991a, p. 1623; Felicetti et al. 2004, pp. 496, 499). Grizzly bears feed on army cutworm moths (*Euxoa auxiliaris*) during late summer and early fall as they try to acquire sufficient fat levels for winter (Mattson et al. 1991b, p. 2432). Lastly, in some years, whitebark pine (*Pinus albicaulis*) seeds serve as an important fall food due to its high-fat, energy-rich content (USFWS 2011b, pp. 9-11)

In the NCDE during summer, before berry crops are available, grizzly bears eat roots/corms/bulbs and other vegetation (Aune and Kasworm 1989, p.46, 64; McLellan and Hovey 1995, p. 704). On the eastern front and in Glacier National Park, grizzly bears also feed on concentrations of lady bird beetles and army cutworm moths (Mattson et al. 1991b, p.2430). Once berries become available, grizzlies in the NCDE consume a wide variety of available berries (McLellan and Hovey 1995, p. 704). The amount and species of berries in scats varies annually based on their availability (ibid, p. 704). During late summer to fall, grizzly bears in the NCDE continue to eat berries but also consume more meat and roots/bulbs/corms (Aune and Kasworm 1989 p.46; McLellan and Hovey 1995, p. 704). Late summer to fall is also the time when grizzlies make use of whitebark pine nuts when and where they are available (ibid, p. 71).

In addition to foraging habitat, a degree of isolation from humans and human-associated activities and hiding cover are necessary habitat components for grizzly bears (Mattson et al. 1987, pp. 18-22; McLellan and Shackleton 1988, pp.458-459, 1989, pp. 378-379; Mace et al. 1996, p. 1402-1403, 1999, pp. 374-376).

Human activities can result in direct mortality of bears, as well as indirect negative effects by displacing bears to less suitable habitats (McLellan et al. 1999, p. 918, Wakkinen and Kasworm 2004, p. 74). In certain settings, the most effective way to minimize the risk of adverse interactions between humans and bears is to provide spatial separation between areas of human activity and areas of bear activity; for example, area closures or restrictions during times of concentrated feeding. In areas where such separation is not possible, providing large areas of secure habitat that include seasonal habitats may reduce the potential for contact and minimize risk of disturbance and illegal mortality (Mace and Waller 1998, p. 1014).

Managing public motorized access to grizzly bear habitat is one of the most common and effective ways to maintain a level of separation between grizzly bears and humans, which — (1) minimizes human interaction and reduces potential grizzly bear mortality risk; (2) minimizes displacement from important habitat where energetic requirements can be met with limited disturbance from humans; and (3) minimizes habituation to humans (Mattson et al. 1987, pp.19-20; McLellan and Shackleton 1988, pp.458-459; McLellan 1989, p. 1856; Mace and Manley 1993, pp.24-27; Mace et al. 1996, pp. 1402-3; Wakkinen and Kasworm 1997, pp.22-26). Secure habitat for grizzly bears referred to as “core areas” is specifically defined by the Interagency Grizzly Bear Committee (IGBC) (1998, p.4) as areas that are at least 0.3 mile from any open road or motorized trail and that receive no motorized use of roads or trails during the period they

are considered secure habitat (typically at least 10 years). Such lands should also encompass areas of seasonal importance for grizzly bears throughout the year.

While security cover allows grizzly bears to avoid contact with humans, the cover is sometimes necessary for bears to avoid contact with other bears. Strict territoriality among grizzly bears is not known, and intraspecific defense behavior generally tends to be limited to defense of limited food concentrations, defense of young, and surprise encounters (USFWS 1993, p.2). Adult male bears are known to kill juveniles, and adults also occasionally kill other adults. Females with cubs require spatial separation from aggressive males. This is particularly true in spring, when cubs-of-the-year are most prone to attack. Data are insufficient to fully assess the effects of predation on younger bears by adult bears (USFWS 1993, p. 5), particularly when considering potential indirect effects of various human activities that may displace a subadult bear into the home range of an aggressive adult bear. Sows with cubs often select rugged and isolated habitats for this reason (Mace and Waller 1997, p. 148; Russell et al. 1979, p.124). Shrub and tree cover, as well as topographic landscape features, are commonly used as security from humans or other bears (McLellan and Hovey 2001, p. 97; Wielgus et al. 2002, p. 1604), and dispersing subadult bears may be forced to choose poor home ranges that may be equally dangerous to their survival (USFWS 1993, p. 5). There are no broadly accepted Service or IGBC standards related to grizzly bear cover.

Another key habitat requirement for grizzly bears is the presence of suitable denning habitat. Den site characteristics are variable, but several researchers have described dens located at high elevations in remote areas with slopes greater than 30 degrees, soils that are deep, and aspects where snow accumulates (Craighead and Craighead 1972, p. 17; Linnel et al. 2000, p. 404; Mace and Waller 1997, p. 39; Podruzny et al. 2002, p. 25). Sloped sites are often selected because they facilitate easier digging and are generally stabilized by trees, boulders, or root systems of herbaceous vegetation. In addition to excavating dens, grizzly bears den in natural caves and hollows under the roots of trees. While individual den sites are rarely reported to be used for more than one winter, numerous researchers have observed that dens rarely occur singly, but are concentrated in areas that apparently possess appropriate environmental conditions (Craighead and Craighead 1972, pp.27- 28).

As discussed in our 2008 biological opinion on Amendment 24 to the Flathead National Forest (USFWS 2008, pages 30 - 44), den abandonment has been documented in association with industrial activity and direct approach (Reynolds et al. 1986, p. 174; Harding and Nagy 1980, p. 278; Jonkel 1980, p. 3; Craighead and Craighead 1972, p. 31). Harding and Nagy (1980, p. 278) found that one grizzly bear abandoned its den after having the den driven over by a seismic vehicle. On the other hand, other events with seemingly similar levels of disturbance have not led to den abandonment (Jonkel 1980, p. 2; Reynolds et al. 1986, p. 174; Mace and Waller 1997, p. 41; Linnell et al. 2000, pp. 407-408). We are not aware of any primary-source reports in the literature of grizzly bear den abandonment directly attributed to snowmobile activity (USFWS 2008, p.33). Nor has other substantive adverse effects on bears from snowmobile use been substantiated (see discussion in USFWS 2008, pp.32-53). In fact, Mace and Waller (1997, p. 41) reported no abandonment of dens by grizzly bear even though snowmobiles were often seen within 2 km of den sites. Likewise, the Interagency Grizzly Bear Study Team has intensively

researched grizzly bear ecology in the Yellowstone Grizzly Bear Ecosystem from the 1970's to present, but this research has never documented den abandonment attributed to snowmobiles.

In our 2008 biological opinion, we agreed with Graves and Reams (2001), that disturbance from snowmobiles may be most consequential shortly before or after den emergence of a female with cubs. Females and their cubs remain in the den site area for several weeks after emergence from dens (Haroldsen et al. 2002, p. 33; Mace and Waller 1997, pp. 37-38). Females with cubs have high energetic needs, and cubs have limited mobility for several weeks after leaving the den. Disturbance levels that cause a female to prematurely leave the den in spring or move from the den area could impair the fitness of the female and safety of the cubs. If cubs attempt to follow their mother, they will likely experience decreased fitness and the family group may be pushed to less suitable habitat. Our conclusion in 2008 remains the same: "In the judgment of the Service, snowmobile-related impacts on post-den emergence females with cubs are more likely to impart serious consequences than any potential impacts to denning grizzly bears."

4. Habitat Fragmentation

Habitat linkage and connectivity are important components of grizzly bear habitat (Servheen et al. 2001, p. 164, USFWS 1993, p. 24). Fragmentation of habitat is particularly relevant to the survival of grizzly bears. Grizzly bears are large animals with great metabolic demands requiring extensive home ranges. Large expanses of unfragmented habitat are important for feeding, breeding, sheltering, traveling, and other essential behavioral patterns. Historically, as human settlements and developments along roads increased in grizzly bear habitat, grizzly bear populations became fragmented. This phenomenon continues today. That is, grizzly bears attempting to move within recovery zones or between recovery zones often encounter high volume roads, concentrated human development, and/or altered vegetation that does not provide foods, cover, or security. These conditions can contribute to human-caused mortality as well as deter movement and hence fragment populations. Maintaining linkage and connectivity between small, isolated grizzly bear populations can benefit grizzly bears in several ways, including (1) allowing immigrant grizzlies to bolster a resident population in an area that has been affected by catastrophic events or negative environmental conditions, and (2) preserving genetic diversity by reducing negative effects from inbreeding. Task 37 in the federal Grizzly Bear Recovery Plan (USFWS 1993, p. 36) called for the evaluation of linkage potential between grizzly bear recovery zones.

5. Grizzly Bear Dispersal, Movements, and Genetic Health

Because grizzly bears live at relatively low population densities and are vulnerable to excessive human-caused mortality, human-caused fragmentation of historically contiguous populations into isolated "remnant" populations is a management reality on the current ecological landscape (Forman and Alexander 1996, p. 207; Proctor et al. 2012, p. 5; Servheen et al. 2001, p. 164). It is a widely accepted tenet in conservation biology that extinction risk of isolated populations is reduced even through minimal levels of connectivity. At greatest risk of extinction are small isolated populations with less than 100 individuals. Such populations are more susceptible to extinction through demographic processes such as human-caused mortality, natural mortality,

and lower population growth rates as well as environmental processes such as poor food years, climate change, and habitat loss. While the CYE and SE grizzly bear populations (at issue in this biological opinion) contain less than 100 individuals each, they are not entirely isolated from Canadian populations. Small populations benefit greatly from both demographic rescue (i.e., the immigration of female bears) and to a lesser degree genetic rescue (i.e., immigration of male bears). Although reconnection of these isolated populations is challenging, metapopulation theory directs that connectivity is the best long-term conservation practice to increase the resiliency, redundancy, representation, and overall probability of persistence of remaining grizzly bear populations in the lower 48 States (Boyce 2000, pp. 6-242-243).

Proctor et al. (2012, p. 10) compiled and analyzed all known genetic and movement data for grizzly bears in 30 different study areas. They assessed the current state of genetic fragmentation within and between these study areas and used genetic assignment testing and movement data from radio-collared animals to compile what is known about current levels of male and female movement.

Samples from coastal British Columbia and the Selkirk Mountains south of Canadian Highways 3 and 3A (i.e., the SE) have unique genetic material that is dissimilar to other grizzly bear populations in southern Canada and the northern U.S. In the Selkirks, this difference is most likely due to genetic drift acting on a small isolated population over several generations because of anthropogenic pressures (Proctor et al. 2012, p. 33).

Although there are differences in heterozygosity values among study areas and recovery zones, there have been no detectable consequences on grizzly bear morphology, physiology, ecology, or biology related to these differences in genetic diversity as evidenced by normal litter size, little evidence of disease, an equal sex ratio, and physical characteristics such as body size and weight (Schwartz et al. 2006, pp. 22-23; Kasworm et al. 2008, p. 67; USFWS 2011b, p. 11).

These genetic differences are not the result of natural selection in varying environments or indicative of historical conditions. Instead, they are artifacts of human pressures (Proctor et al. 2012, pp.27-28). Grizzly bears face high mortality risk when moving between secure blocks of habitat. This mortality risk and very low population sizes resulting from past range contraction and mortality have resulted in genetic fragmentation. Each of these fragmented populations may possess genetic material missing from other populations. Maintenance of this genetic material is important to the long-term ability of this region's grizzly bears to respond to environmental changes.

Because grizzly bears have low reproductive rates (Bunnel and Tait 1981 as cited *In* Proctor et al. 2004, p. 150) long generational times (i.e., 10 years), and are slow to disperse across landscapes (Proctor et al. 2004, p. 148), there can be a lag time between fragmentation and resulting changes in genetic diversity. The genetic data collected by Proctor et al. (2012, pp.16-23) reflect fragmentation occurring on the landscape in the recent past (i.e., last 30-60 years).

Proctor et al. (2012) pp. 27-28 also examined grizzly bear movements between ecosystems that displayed varying levels of genetic separation. These movement data were collected from 1985-2007 and represent a more recent picture of fragmentation than genetic data.

In general, Proctor et al. (2012, p. 35) found males move more frequently and over longer distances than females. This result is expected based on what we know about female home range size and the dispersal process. Females usually establish smaller home ranges than males that overlap with their mother's (Servheen et al. 1983, p.1032). In doing so, they generally disperse over much shorter distances than male grizzly bears (McLellan and Hovey 2001, p. 97; Proctor et al. 2004, p. 154). The majority of migrants that moved from one study area to another were males but a few females were also observed moving between genetically fragmented populations (Proctor et al. 2012, p. 21, 23).

Connectivity must be examined in a genetic (requires males only) and demographic (requires females) framework. While male movements can enhance genetic diversity and reduce genetic fragmentation (Miller and Waits 2003, p. 4348; Proctor et al. 2012, pp.26-27), female movements are necessary to enhance a small population's growth rate (Proctor et al. 2012, pp.26-27). This concept is relevant to grizzly bear recovery in the NCASC, SE, and CYE recovery zones, all of which contain small populations that are demographically and genetically isolated to varying degrees.

Proctor et al. (2012, p. 34) documented increasing genetic and demographic fragmentation across Canada Highway 3. If allowed to continue, this fragmentation could lead to a loss of connectivity between U.S. and Canadian grizzlies. Canada Highway 3 is at least a partial barrier to population connectivity by minimizing female crossings (Proctor et al. 2005; Proctor et al. 2012, p. 35). Maintaining and increasing movements by females (i.e., demographic rescue) from Canadian populations into the small populations (NCASC, SE, and CYE) is critical to the long-term conservation of these populations. Recovery could be accomplished via natural movements or translocating animals.

Another aspect of connectivity that Proctor et al. (2012, p. 17) examined was known habitat use by grizzly bears in intervening habitats between Service-identified recovery zones. This habitat use is relevant to understanding how and where grizzly bears in different ecosystems may be linked in the near future. Proctor et al. (2012, p. 20) found 4 males and 1 female using habitat between the Selkirk and Purcell Mountains in Canada, although there was no evidence indicating any migration between these 2 mountain ranges.

Mace and Roberts (2012, pp. 24-27) documented the distribution of grizzly bears in and adjacent to the NCDE recovery zone based on a compilation of telemetry data, mortality data, and DNA detections and found that a small number of both male and female grizzly bears are occupying habitat a substantial distance from the recovery zone boundary (i.e., greater than 10 miles) (Figure II-3). One female grizzly bear with a cub is known to regularly use habitat between the NCDE and CYE. Prior to dropping her collar in 2006, she and her offspring spent most of their summer in the Salish Mountains of Montana less than 2 miles east of the edge of the CYE while denning within the boundaries of the NCDE recovery zone (Kasworm et al. 2009 p.47). A positive development has been grizzly bears, including females with cubs, being documented in the Tobacco BORZ between the CYE and NCDE over the past several years (Kasworm et al. 2012, p. 16; 2013).

Currently, it is not possible to tell if movements we are observing reflect an increase in bear movements or an increase in detection effort and technology (e.g., radio-transmitter collars; genetic techniques) (Proctor et al. 2012, pp. 36-37). These promising detections of grizzly bear movements should be tempered by the idea that detected movement does not mean migrants are breeding successfully. If there is no successful reproduction, then there is no genetic or demographic rescue occurring. There seems to be high mortality risk associated with migrant bears (Proctor et al. 2012, pp. 35-36). However, these data are helpful when considering how to most effectively manage and conserve the remaining grizzly bear populations in the lower 48 States. For example, these data emphasize the importance of maintaining demographic connectivity with Canadian populations and the small populations of the NCASC, SE, and CYE, while highlighting the importance of recovering these small populations so that they can provide genetic and demographic rescue for the Bitterroot Ecosystem (BE). Of relevance, the NCDE appears to be well connected to Canadian populations genetically and its large population size means female movements from Canada into the NCDE are not absolutely required for demographic health to be maintained, although such female movements are beneficial. Similarly, the Greater Yellowstone Area (GYA), which is inclusive of the YGBE, has a large enough population size that demographic rescue is not required. Instead, 1-2 migrants every generation (i.e. 10 years) is adequate to maintain current levels of genetic diversity in the GYA (Miller and Waits 2003, p. 4338).

6. Range-wide Status

When grizzly bears in the lower 48 States were listed under the ESA in 1975, the vast reduction in range, increase in trail and road construction, increase in recreation, livestock use of National Forest lands, unsustainable human-caused mortality, lack of data regarding populations, and isolation were identified as factors affecting their conservation status (40 FR 31734, July 28, 1975). To date, all of these threats have been addressed to varying degrees in different areas.

New information regarding grizzly bear biology, current status, and threats has become available over the years since listing. This research and information has been valuable in addressing the

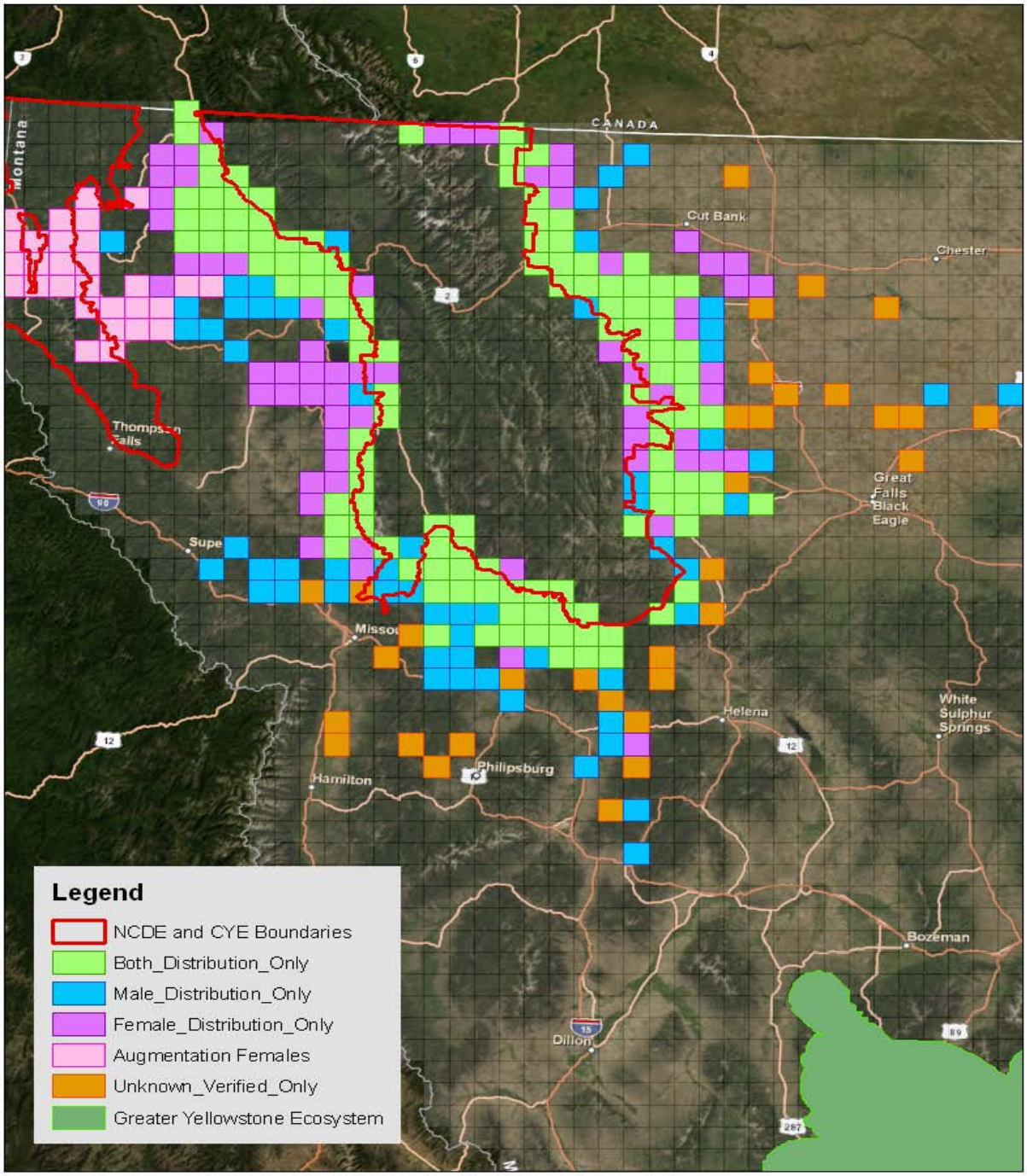


Figure II-3. Distribution of grizzly bears in and adjacent to the NCDE federal recovery zone from 1989 to 2011). Based on telemetry data, mortality data, and DNA detections in 2004 (from Kendall et al. 2009, entire) *in* Mace and Roberts 2012*. ****Occupancy was based on presence within 10 km^2 grid cells.*

impacts and management of roads, trails and recreation and livestock management. It has also indicated the need for public information and assistance programs, along with attractant storage, to limit human-caused mortality of grizzly bears. Proctor et al. (2012) compiled and analyzed all known genetic and movement data for grizzly bears in southern Canada and the NCDE, CYE, SE, NCASC, and YGBE populations. As discussed earlier, genetic data indicate population fragmentation in the recent past (Proctor et al. 2012, pp.27-28). Movement data demonstrated that males move more frequently and over longer distances than females, but it is female movements that are necessary to enhance a small population's growth rate (Proctor et al. 2012, pp.26-27).

Although there are six grizzly bear recovery zones, only five are occupied; the Bitterroot Ecosystem does not have a grizzly bear population at this time. We have recent population data for the GYA, NCDE, CYE and SE. The current range and distribution of grizzly bears in the lower 48 States is fluid, as dispersal is occurring and the specific distribution has not been quantified systematically across all ecosystems. Grizzly bears now occur both within the formally designated recovery zones and in some habitat adjacent to the NCDE, YGBE, SE, and CYE (Wittinger et al. 2002, entire; USFS 2009, entire; Mace and Roberts 2011, pp. 38, 39; 2012 pp. 24-27).

These following population estimates include grizzly bears in the recovery zone and within a 10-mile radius of the recovery zone boundary. There are about 1,500 grizzly bears in the lower 48 States, approximately: 765 in the NCDE; 600 in the GYA; 45 in the CYE; 30 in the SE; and 10 to 20 in the NCASC (Table II-4). Subadult and adult female survival has the largest influence on population trend in all ecosystems (Mace and Waller 1998, p.1008; Wakkinen and Kasworm 2004, p. 68). Population numbers and trends are described below for each recovery zone.

Portions of two of these recovery zones, the CYE and the SE, are included in the action area (see Environmental Baseline) considered in this biological opinion, and so are discussed in more detail below. The GYA, NCASC, BE, and NCDE recovery zones are not affected by the Proposed Action.

Following is a summary of the status of grizzly bears for the four recovery zones not included in the action area followed by a more detailed discussion for the two recovery zones that are included in the action area.

Table II-4. Most recent estimates of grizzly bear population size and population growth rate by recovery zone.

Recovery Zone	Estimated Population Size	Trend (% change annually)
Greater Yellowstone	593[a]	+ 2 % [b]
Northern Continental Divide	765[c]	+3% [d]
Cabinet-Yaak	42[e]	– 0.8 % [e]
Selkirk	80[f]	+ 1.9 % [g]
North Cascades	< 20	Unknown
Bitterroot	0	n/a

a. Interagency Grizzly Bear Study Team 2012 annual report; b. Haroldson 2012; c. Kendall et al. 2009; d. Mace and Roberts 2012; e. Kasworm et al. 2012; Kasworm 2013 unpublished data; f. Proctor et al. 2012; Wakkinen 2010; g. Wakkinen and Kasworm 2004.

Yellowstone Ecosystem

The YGBE is located in northwest Wyoming, eastern Idaho, and southwest Montana and encompasses 9,200 sq. mi. It is approximately 240 miles from the BE and at least 75 miles from the grizzly bear population in the NCDE. In 2011, the total population size for the YGBE population was estimated at 593 individuals, with a 95 percent confidence interval between 533 and 652 (Haroldson 2012, p.12 and 15). The YGBE population was increasing in size approximately 4-7 percent annually from 1983 to 2001 (Schwartz et al. 2006 and Haroldson 2012, p.2). Population growth slowed to 0-2 percent from 2002 to 2011 (Schwarz et al. 2006 and Haroldson 2012, p.2). For more details regarding GYA demographic features, please refer to the Yellowstone Final Rule (72 FR 14866, March 29, 2007), the latest Interagency Grizzly Bear Study Team (IGBST) Annual Reports (online at http://nrmsc.usgs.gov/products/IGBST), and Schwartz et al. (2006, entire).

North Cascades Ecosystem

The NCASC of north central Washington (9,500 square miles) is estimated to contain less than 20 bears (Almack et al. 1993, *In* USFWS 2011b, p. 12). The nearest population of grizzly bears is immediately north in Canada with an estimated 25 individuals but populations to the east and west of the Cascades in Canada are considered extirpated (North Cascades Grizzly Bear Recovery Team 2004, p. 7). The distribution of grizzly bears within the NCASC is unknown due to a lack of data (USFWS 2011a, p. A-31). Very few credible sightings and reports exist. A recent confirmed sighting in the U.S. occurred September, 2010. There are a few credible reports from north of the border in the B.C. portion of this ecosystem (USFWS 2011a, p.A-27).

North Continental Divide Ecosystem

The NCDE extends from the Rocky Mountains of northern Montana into contiguous areas in Alberta and British Columbia, Canada. The U.S. portion of the NCDE that makes up the NCDE

recovery zone encompasses over 9,600 square miles (USFWS 2011a, p.A-12) and includes parts of five National Forests (Flathead, Kootenai, Helena, Lewis and Clark, and Lolo), four wilderness areas (Bob Marshall, Mission Mountains, Great Bear, and Scapegoat) and one wilderness study area (Deep Creek North) (Figure 1). Additionally, the NCDE recovery zone includes Glacier National Park (GNP), the Flathead Indian Reservation (Salish-Kootenai tribal land), the Blackfeet Indian Reservation, adjacent private and State lands, and lands managed by the Bureau of Land Management. National Forest System lands encompass 63 percent of the NCDE recovery zone. The Flathead National Forest makes up 40 percent of the NCDE recovery zone and is the majority federal manager of lands within the NCDE recovery zone; wilderness areas (30 percent) and Glacier National Park make up about 47 percent of the recovery zone (USFWS 2011b, p. 38).

Two population studies were designed with the objective to more reliably estimate the number of grizzly bears inhabiting the NCDE. The U.S. Geological Survey (USGS) DNA-based mark-recapture study in the greater Glacier area collected information from 1998 through 2000. The USGS also conducted an extensive DNA-based study to estimate the grizzly bear population size in 7.8 million acres of occupied grizzly bear range in and around the NCDE recovery zone. The Northern Divide Grizzly Bear Project produced a final total NCDE grizzly bear population estimate of 765 grizzly bears for 2004 (USGS 2008; Kendall et al. 2009, p.9; USFWS 2011a, p. A-14). The total population estimate of 765 for 2004 illustrates the conservative nature of the recovery plan minimum population estimate of 304 grizzly bears in 2004. The DNA-based estimate is scientifically robust, and is more than two times the recovery plan estimate.

In 2004, Montana Fish, Wildlife and Parks initiated a NCDE grizzly bear trend monitoring project (Mace and Chilton 2009, p. 1). The purpose of this program is to estimate population trend by monitoring the survival and productive rates of radio-instrumented female grizzly bears. Thus far, a total of 104 individual females have been captured and monitored. Results reveal an annual growth of about 3 percent, indicative of an increasing grizzly bear population in the NCDE (Mace and Roberts 2012, p. 24).

Bitterroot Ecosystem

The BE of east-central Idaho and western Montana (5,600 square miles) is not considered to be occupied by a population of grizzly bears at this time (USFWS 2011b, p. 27).

Cabinet-Yaak Ecosystem

The U.S. portion of the CYE recovery zone is approximately 2,609 square miles in size and is located primarily in northwestern Montana with small portions in northern Idaho. The juxtaposition of the CYE population to the SE and NCDE grizzly bear populations to the east and west, respectively, makes it essential to long-term survival and recovery of grizzly bears throughout a significant portion of its range in the U.S.

Land ownership in the CYE is approximately 90 percent Federal, 5 percent State, and 5 percent private lands. The Kootenai National Forest manages approximately 72 percent of lands within the CYE recovery zone, with the Idaho Panhandle and Lolo National Forests administering the

remaining Federal lands within the recovery zone. Approximately 5.6 percent (94,272 acres) of the CYE recovery zone is designated Wilderness. Major private land owners in the recovery zone include Plum Creek and Stimson Timber Companies. Individual landowners live on various-sized acreage along the major rivers. The relative distribution of grizzly bears across this ownership pattern is unknown, but is believed to be proportionate to land ownership (i.e., approximately 90 percent of the grizzly bear population lives on the 90 percent of public land within this recovery zone).

In Canada, the portion of British Columbia directly north of the Cabinet-Yaak recovery zone is largely Crown land (public) with the exception of the Moyie and Kootenay River valleys.

Population Trend

The CYE is often described in terms of having two portions. The Cabinet Mountains portion forms the southern half of the CYE and is topographically diverse with steep mountain ranges (up to 8,700 feet) and definable seasonal habitats. The Yaak portion has gentler topography and lower elevations (up to 7,700 feet). Seasonal habitats are not as clearly definable. More research and telemetry work has occurred in the Yaak than the Cabinet Mountains. The U.S. portion of the CYE Recovery Zone was estimated to contain at least 42 grizzly bears during 2006 to 2011 (Kasworm et al. 2012 p.2). The Cabinet Mountains lie south of the Yaak River drainage and contain about 60 percent of the recovery zone. During 2006 to 2011, there were approximately 21 individuals in the Cabinet Mountains and 21 individuals in the Yaak portion of the recovery zone (Kasworm et al. 2012, pp.21-22). This population estimate of 42 grizzly bears is similar to our 1999 estimate of 30 to 40 in the CYE (64 FR 26725, May 17, 1999).

Demographic information from bears occurring outside a 10-mile buffer of the recovery zone is not used to assess population status. Therefore, while data may be collected within the portion of BORZ beyond the 10-mile buffer around the recovery zone, it is not used to determine the population status in the CYE. The 1993 Recovery Plan states that habitat within recovery zones, managed for grizzly bear use, is adequate to recover bear populations.

Survival analysis and reproductive data is used to calculate a “rate of change” in the population or “population trend”. Only radio-collared bears are used in this analysis because they typically have known fates. Furthermore, standard methodology includes only female adults and sub-adults plus all yearlings and cubs when calculating trend. As long as there are sufficient males for breeding, males are not as important to the ability of the population to increase. Sub-adults are bears aged 2-4 years.

Survival rates have been calculated for radio collared native grizzly bears in the CYE from 1983-2012. All grizzly bears relocated into the Cabinet Mountain as part of the state’s augmentation program (i.e. bears not native to the CYE) were removed from the sample and almost all of the remaining individuals were from the Yaak River portion of the population. A survival rate of 1.0 means all bears in that category survived and there was no mortality. From 1983-2009, Kasworm (2010a, 2010b) shows the survival rate for adult females in the CYE was 0.93, adult males 0.88, sub-adult females 0.78, sub-adult males 0.75, yearlings 0.85, and cubs 0.58. Kasworm (2013 unpublished data) updates calculated survival rates through 2012 as: adult

females 0.940; adult males 0.895; sub-adult females 0.811; sub-adult males 0.750; yearlings 0.900; and cubs 0.571. Survival rates in all sex and age classes show improvement except cubs. While cub survival is typically low, yearling survival is higher. It also appears that first time mothers are less successful at raising cubs than older, more experienced mothers. Sub-adult survival naturally decreases from yearling survival as bears are on their own without the protection of their mothers.

Reproduction is a measure of female cubs produced per adult female per year. In the CYE area Kasworm (2013 unpublished data) shows the reproductive rate is 0.372. Sex ratio of observed cubs is assumed to be 50:50.

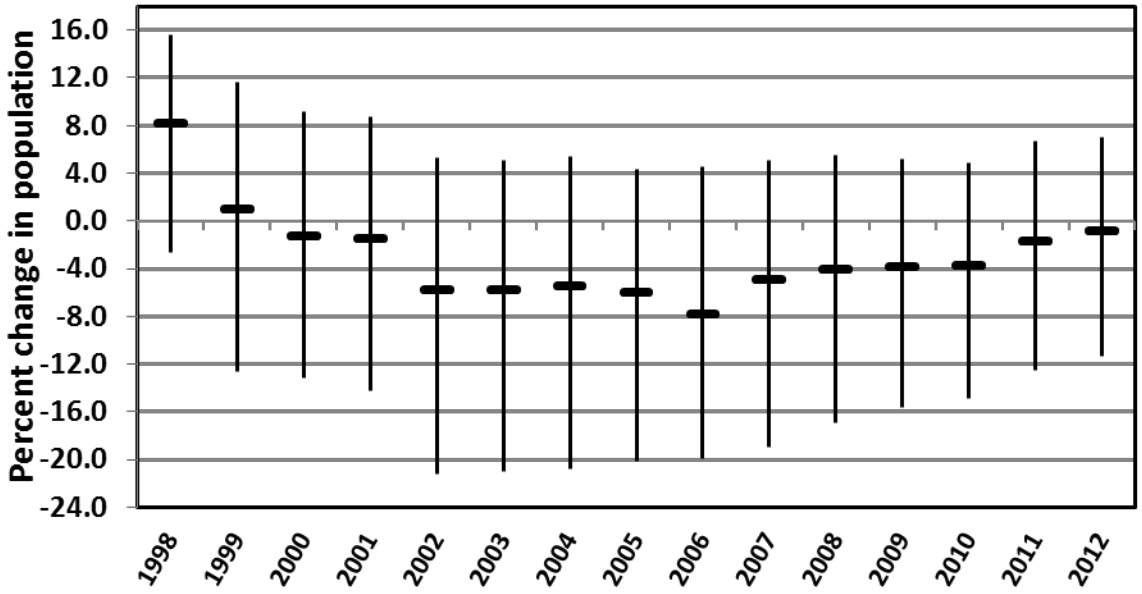


Figure II-4. Point estimate and 95 percent confidence intervals for cumulative annual calculation of population rate of change for native grizzly bears in the Cabinet-Yaak recovery area 1983-2012

The observed rates of survival and reproduction are used to calculate a rate of change in the population (lambda). This calculation is essentially births - deaths = population change and is measured against a stable population depicted by lambda equaling 1.0. This calculation only involves female adult and sub-adult survival plus all yearling and cub survivals.

In 2006 lambda for the CYE grizzly bear population reached its lowest point (0.920) since calculations started, indicating an annual rate of decline of -8.3 percent. However, in 2009, the point estimate of lambda for all data (from 1983-2009) had increased to 0.963 (Kasworm 2010a, 2010b). This equates to a population declining at an annual rate of -3.8 percent. In 2012, the updated lambda (for 1983-2012) was 0.992, which corresponds to a -0.8 percent annual rate of

change (Kasworm 2013 unpublished data). Thus, lambda has improved and moved closer to stability (1.0); an indication that the CYE grizzly bear population status is improving (see Figure II-4). Each entry represents the annual rate of change from 1983 to that date (Kasworm 2013 unpublished data).

Status of Recovery Criteria

The Recovery Plan estimated that a recovered population in the CYE recovery zone would consist of a minimum of about 100 individual grizzly bears and grizzly bears would also live in and use areas outside the CYE recovery zone. Therefore, Recovery Plan population parameters include bears observed up to 10 miles outside the recovery zone boundary (USFWS 1993, p.83).

Demographic recovery criteria were developed to address overutilization and human-caused mortality (see listing factors) within each recovery zone and a 10 mile surrounding buffer by ensuring a sufficient population size and distribution. These demographic recovery criteria include measures for population size, distribution, and sustainable mortality. The Service is in the process of updating demographic recovery criteria for each ecosystem, based on new science and techniques. However, an update is not complete for the CYE grizzly bear population and so we use the 1993 criteria.

Following are 1993 demographic criteria and the mortality data in recent years for the CYE. The 1993 CYE demographic criteria are: (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) 18 of 22 BMUs occupied by females with young from a running 6-year sum of verified sightings and 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 total human-caused mortality shall be females. These mortality limits cannot be exceeded during any two consecutive years for recovery to be achieved. In 1993, grizzly bear numbers were low in the ecosystem, therefore, the *goal* for human-caused mortality was zero. In reality, the goal of zero human-caused mortality of grizzly bears in the CYE is not likely attainable over time. Nevertheless, recovery programs aim to reduce mortality to the extent possible. The 1993 Recovery Plan demographic criteria and status for the CYE is summarized in Table II-5.

In the CYE, one of the four 1993 demographic recovery criteria were met in 2012 (Kasworm 2013, unpublished data). The population goal of 6 females with cubs has not been met. The 6-year running average was 2.8 females with cubs. The distribution criterion has not been met with only 13 of 22 BMUs occupied by females with young. A positive metric was demographic criteria for human-caused mortality, which was met each year for the past four years (2008-2011) (Kasworm et. al 2012, p.18); but it was not met in 2012. The running 6-year average (2007-2012) of total human-caused mortality was 1.7 animals/year (the limit is no more than 1.6), which includes 0.5 females each year (ibid). Female mortality (0.5), meets the recovery limit of no more than 30% (0.5) of total mortality. However, in 1993, the Recovery Plan stated the mortality *goal* was zero.

Table II-5. Status of the CYE recovery zone during 2006-2011 in relation to the demographic recovery targets from the grizzly bear recovery plan.

Recovery Criteria (USFWS 1993)	Limit	Status - 2006-2011(Kasworm et al. 2012, p.18)
Females with cubs (unduplicated sightings)	6 (6 year average)	2.5 females with cubs
Distribution of females with young (BMUs occupied)	18 of 22	12 of 22 BMUs occupied
Human caused mortality limit (4% of minimum estimate)	1.4 (6 year average)	1.3 bears (6 year average)
Female, human-caused, mortality limit (30% of total mortality)	0.4(6 year average)	0.3 female bears (6 year average)

Grizzly Bear Mortality in the CYE

In the entire CYE (including the 10-mile buffer used to compile demographic information) from 1983 through 2011, there have been a total of 67 known grizzly bear mortalities from all forms, on all ownerships (including Canada) (W. Kasworm 02/04/2013 pers. comm.).

Based on data from 1983 to 2011, total grizzly bear mortality rates in the CYE appear to have increased. During the period 1983 to 1998, the mortality rate was 10 percent (that is 10 percent of bears die from all causes in a given year). From 1999 to 2011 that rate has increased to 15 percent (Kasworm et al. 2012, p.35). Some of the increase in natural mortality is probably related to poor berry production from 1998 to 2004 (ibid). There appears to be a strong relationship between poor huckleberry production and total mortality in the CYE. During this same time period an increase in human-caused mortality on private lands in the U.S. also contributed to the increase in overall mortality. Poor berry production may have caused bears to search more widely for foods that may occur on private lands; several mortalities during this time period were associated with sanitation issues on private lands (ibid). During this same time period, human-caused mortality on public lands in both Canada and the U.S. decreased. As presented in the Access Amendment Biological Opinion (USFWS 2011b, p. 20-27), Kasworm's 2010 synopsis of mortality rates concluded that since 1999, there appears to have been an increase in the numbers of grizzly bears killed on private lands in the CYE recovery area. Also since 1999:

1. natural mortality on U.S. public lands in the CYE recovery area was 53 percent of mortality among radio-collared bears.
2. human-caused mortality on private lands in the U.S. was 23 percent of mortality among radio-collared bears.
3. human-caused mortality on U.S. public lands was 14 percent of mortality among radio-collared bears, and
4. in B.C. human-caused mortality was 10 percent of mortality among radio-collared bears.

Kasworm (2010a) goes on to say "Therefore, mortality on private lands in the U.S. has become the largest source of human-caused mortality in the CYE. Grizzly bears are now being killed by humans at disproportionately higher numbers on private lands than on NFS lands: the CYE is about 90 percent public land, yet human-caused mortality on these lands is only about 14 percent of the mortality among radio-collared bears. The CYE is about 10 percent private land, yet human-caused mortality occurring on private land is 23 percent of mortality among radio-collared bears." "...To accomplish recovery of the population in the CYE, efforts to reduce the high levels of human-caused mortality on private lands are necessary (ibid)." Since 2010, 5 additional mortalities have occurred in the CYE. All were human-caused and 4 were on NFS lands and one was on private lands in the U.S.

To address hunter-related mortality, Montana and Idaho state agencies have ongoing hunter outreach efforts. Montana Fish Wildlife and Parks (MFWP) has implemented a mandatory bear identification test since 2002 to help educate hunters in distinguishing species in an effort to reduce mistaken identity and grizzly bear mortality. MFWP also runs numerous public announcements in the media prior to and during hunting seasons, reminding hunters to be knowledgeable and use proper precautions in grizzly bear habitat. A grizzly/black bear identification test is available on the Idaho Fish and Game (IDFG) website and informational letters are mailed to black bear and elk hunters in the fall and spring (Wakkinen 2012, Research and Management Update, p. 2).

Selkirk Ecosystem

The SE is located primarily in northern Idaho but includes portions of Washington and Canada also. It encompasses over 2,200 square miles of the Selkirk Mountains of northeastern Washington, northern Idaho, and southern British Columbia. Approximately 47 percent of the recovery zone is in British Columbia with the remainder in the U.S. The 1993 Recovery Plan defined a portion of the SE within Canada so that it was at least 2,000 square miles in size. This size will promote the Recovery Plan's minimum population goal of 90 grizzly bears in the SE (USFWS 1993 p. 99). In Canada, land ownership is roughly 65 percent Crown (public) land and 35 percent private. In the U.S. portion of the SE, land ownership is approximately 80 percent Federal, 15 percent State, and 5 percent private lands. Within the SE, 3 percent (39,976 acres) is designated Wilderness Area.

Population Trend

Proctor et al. (2012, p.31) compiled data from multiple sources and conducted DNA-based population surveys) to estimate a population size of 83 grizzly bears in the SE, with 25-30 in the U.S. (W. Wakkinen 07/02/2013 pers. comm.), which is based on expert opinion. The Idaho Department of Fish and Game (IDFG) is currently working on a revised population estimate for the U.S. portion of the SE that will present a more scientifically rigorous estimate. As previously discussed, it was estimated in 2004 that the population of grizzly bears in the SE was slowly increasing at a rate of 1.9 percent annually (Wakkinen and Kasworm 2004, p.72). Recently, Wakkinen indicated that there is no evidence that would suggest any major changes from the

2004 population growth rate; however, this will be updated in upcoming years (W. Wakkinen 07/02/2013 pers. comm.).

Status of Recovery Criteria

Table II-6 shows the 1993 demographic criteria and the status of those criteria for the SE. The Service is in the process of updating the 1993 recovery plan as there are new science and techniques available. Regarding mortality, 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 is zero human-caused mortality.

Table II-6. Status of the recovery criteria for the SE recovery zone.

Selkirk Recovery Zone Recovery Criteria (USFWS 1993)	**Target**	**Status (*In* USFWS 2011b, p. A-15)**
Females with cubs (unduplicated sightings)	6 females with cubs (6-year average)	0.5 females with cubs (6-year average)
Distribution of females with young (BMUs occupied)	7 of 10	4 of 10
Human-caused mortality limit	not to exceed 4% of the population estimate (6 year average)	Although there was only 1 mortality of a male grizzly bear in 2008, the running 6-year average of total human-caused mortality was 2.5 animals per year including 1.2 females each year.

As shown in Table II-6, none of the 1993 demographic recovery criteria have been met in the SE (USFWS 2011a, p. A-115). Wakkinen (2009 pers. comm.), noted: "that the ability to monitor the population has declined due to funding limitations and the reduction in trapping and radio collaring activities" in the recovery area. The population goal of 6 females with cubs has not been met. In 2008, the 6-year running average was 0.5 females with cubs. In 2009 the 6-year running average dropped to 0.3 females with cubs, but there were no observations of family groups in the BMUs in 2009 due in part to the lack of radio-collared grizzly bears in the U.S. portion of the recovery zone. Since 2012, Kasworm has been working with IDFG to monitor grizzlies in the SE. In 2012, three female grizzly bears were radio collared just north of Priest Lake and in July 2013, an additional three female grizzly bears were radio collared in the same area (Kasworm 2013, p.2). All females are currently being monitored through weekly flights.

Grizzly Bear Mortality in the SE

In the SE from 1989 to present, there have been a total of 55 known grizzly bear mortalities. Based on data from 1989 to present, grizzly bear mortality rates in the U.S. portion of the SE appear to have decreased but mortalities remain moderately high in the Canada portion (W. Wakkinen 07/02/2013 pers. comm.). Most mortality in the U.S. portion of the SE is human-

caused and the result of mistaken identification or intentional poaching during the hunting season. Conversely, in the Canada portion, most mortality is human-caused and the result of sanitation issues or other human-bear conflict issues.

To date, there have been no known mortalities associated with sanitation issues on NFS lands (USFS 2013a, p. 73). The absence of grizzly bear mortalities on NFS lands is likely due to a concerted effort to improve sanitation on NFS lands.

Similar to the CYE, there appears to be a relationship between poor huckleberry production and total grizzly bear conflicts in the US portion of the SE, but the sample size is limited and the conditions that elicit grizzly bear mortalities can be variable (ibid). For example, it is not clear whether grizzly bears are in low elevations because of poor huckleberry production, an expanding population, or because they are drawn by attractants regardless of huckleberry production (ibid).

Additionally, a grizzly/black bear identification test is available on the IDFG website and informational letters are mailed to black bear and elk hunters in the fall and spring (Wakkinen 2012, Research and Management Update, p. 2).

7. Factors Affecting the Status of the CYE and SE Recovery Zones

Habitat Conservation Measures

Habitat conservation includes measures and programs to avoid or reduce habitat loss or displacement of grizzly bears from important seasonal habitats. "Displacement" is used in general terms to describe "under-use" of habitat. It does not necessarily mean that grizzly bears would totally avoid an area, or be excluded in some way from ever using an area. Such measures and programs include acquisition of important lands for grizzly bears to prevent human encroachment and development; agreements for the conservation and protection of grizzly bear habitat by precluding activities that might otherwise displace bears; and comprehensive provisions for access management and secure habitat (core areas) for grizzly bears to limit human disturbance and subsequent displacement or risk of conflict.

Land Acquisitions

Land acquisition and exchange in the CYE has placed additional areas within this recovery zone in the public domain and may benefit the long term conservation of the species. There have been 2 major land exchanges in particular that have been beneficial to grizzly bear habitat within the CYE. In 1997 the Kootenai National Forest completed a land exchange in which 33 square miles of land owned by Plum Creek Timber Company were placed in public ownership. Almost all of this land was within the CYE grizzly bear recovery zone and is now under Forest Service management.

In 2005, the MFWP acquired almost 2 square miles in the Bull River Valley between the East and West Cabinet Mountains in the Bull BMU on the KNF. A conservation easement on an adjacent one square mile was accepted from the Avista Company. The area, now known as the Bull River Wildlife Management Area, provides linkage of public land across the river valley

and will have value for a number of species including bull trout, westslope cutthroat trout, grizzly bear, lynx, and bald eagle.

See discussion of Fragmentation below for information on acquisitions benefitting the SE.

Conservation Plans and Agreements.

In 1995, the British Columbia provincial government developed a grizzly bear conservation strategy for the lands to the north of the CYE (British Columbia Ministry of Environment, Lands, and Parks 1995, entire). A major goal of the Strategy was to ensure effective, enhanced protection and management of habitat through land use planning processes, new protected areas, and the Forest Practices Code. Gilnockie Provincial Park was established in 1995 just north of the international border in the upper Yaak River drainage. The 11 square mile park is managed similarly to U. S. wilderness areas with little road access.

In September 2012, the MFWP secured a 28,000 acre conservation easement with Stimson Lumber Company for land in the City of Troy. These lands are the largest remaining private in-holding in the CYE recovery zone. The Kootenai Valleys Conservation Program protects important fish and wildlife habitat providing linkage and connectivity across Highway 2 in the CYE (see additional information below in Fragmentation and Genetic Isolation).

Additional conservation in the CYE will be achieved through implementation of the State of Montana's recently completed habitat conservation plan (HCP) which addresses the effects of its forest management program on grizzly bears in the CYE. As a result of that plan, open road densities on state lands on the Montana side of the ecosystem will be maintained or improved, lands will be inactive for a period of 8 years following a commercial timber sale (to provide habitat security for grizzly bears), and all State forest management employees and its contractors will adhere to food storage and sanitation requirements.

In the SE, the LeClerc BMU is comprised of checkerboard ownership between the CNF and Stimson Lumber Company. Stimson Lumber Company manages approximately 21,000 acres of the land within the LeClerc BMU and has entered into a Conservation Agreement with CNF and the Service to minimize adverse effects to grizzly bears (USFWS 2001b, pp.53-54). This Agreement requires Stimson and the CNF to leave hiding cover within created openings, along open roads, and within riparian habitats. Stimson is also required to log during the winter in some areas to reduce disturbance and report logging activities and road entries to the CNF annually. The Service's biological opinion (USFWS 2001b, pp.53-54) on that Agreement included an incidental take statement with terms and conditions providing for no net decrease in core area habitat or an increase in TMRD on affected Forest Service lands.

The Idaho Department of Lands (IDL) BMU in the SE encompasses 160,000 square miles and is situated east of Priest Lake and is under state jurisdiction. IDL received Federal funding in 2003 to develop a Habitat Conservation Plan (HCP) for this area. However, this effort did not result in a finalized HCP for the BMU.

Wheeled Motorized Access Management *(also influences Human-caused Mortality)*

Secure habitat is important to the survival and reproductive success of grizzly bears, (Mattson et al. 1987, pp. 18-19; IGBC 1994, p. 1). Grizzly bear habitat security is primarily achieved by managing motorized access which — (1) minimizes human interaction and reduces potential grizzly bear mortality risk; (2) minimizes displacement from important habitat; (3) minimizes habituation to humans; and (4) provides habitat where energetic requirements can be met with limited disturbance from humans (Mattson et al. 1987, pp.19-20; McLellan and Shackleton 1988, pp.458-459; McLellan 1989, p. 1856; Mace and Manley 1993, pp.24-27; Mace et al. 1996, pp. 1402-3; Wakkinen and Kasworm 1997, pp. 22-26).

In 1998, an IGBC interagency task force examined motorized access management and produced recommendations to standardize definitions and methods (IGBC 1998, pp.3-5). This report recommended three parameters to include as components of access management: 1) open motorized route density (OMRD)[1]; 2) total motorized route density (TMRD); and 3) core areas.

In the SE and CYE, the benchmark for the proposed standards was the average levels of access and secure habitat reported by Wakkinen and Kasworm (1997, p. 1) to adequately support a female grizzly bear with cubs:

- On average, 26 percent of a female grizzly bear home range had TMRD greater than 2 miles per square mile.
- On average, 33 percent of a female grizzly bear home range had OMRD greater than 1 mile per square mile.
- On average, 55 percent of a female home range was comprised of core area (i.e., roadless area or areas with barriered roads).

Past management actions on NFS lands related to motorized access (e.g., timber sales and associated road construction, road maintenance, and watershed improvements through sediment reduction from roads – including road decommissioning) led to the existing wheeled motorized vehicle route system on the landscape. The 2011 Access Amendment for the SE and CYE established standards for core area, OMRD and TMRD for each BMU in the Recovery Zones (USFS 2011c, entire). These security measures are calculated on a BMU basis using a GIS and moving-windows routine.

The Access Amendment also established timeframes in which all standards in individual BMUs in the CYE will be met (completion by 2019). Actual accomplishment dates will depend on management priorities, funding, and the completion of required project-level environmental analyses under NEPA. The Access Amendment also established the amount of administrative use that may occur on each individual gated road within the recovery zone, based on the "bear year" (spring, summer and fall). Each Ranger District retains a count of use that occurs by road; this information is reported to the FWS in the spring of each year. Another key feature of the

[1] Includes both roads and trails

Access Amendment was the re-evaluation of BORZ boundaries and limits on linear miles of open and total permanent roads to existing baseline conditions.

There are 22 BMUs in the CYE recovery zone and 10 BMUs in the SE. According to Service calculations (USFWS 2011a. p. A-39), in the CYE recovery zone, there was an increase of approximately 24,230 acres of core area from 2000 to 2010. This translates into an increase from about 56 percent of the CYE recovery zone to more than 57 percent of the CYE recovery zone providing core area habitat. Overall, motorized route densities have been reduced and secure habitat has increased in the CYE since the grizzly was listed.

According to Service calculations (USFWS 2011a, p. A-44) in the SE recovery zone, there was an increase of approximately 13,032 acres of core area from 2000 to 2010. This translates into an increase from 58.1 to nearly 61 percent of IPNF lands in core area from 2000 to 2010 (which includes eight BMUs managed by the IPNF).

The Grizzly Bear Access Amendment standards and their current status are displayed in Table II-7. Attainment of the standards is anticipated by approximately 2019. If successful, core area in the CYE will have increased by 20,756 acres such that 58.5 percent of the CYE will be core area and 20 of 22 BMUs will meet the research benchmark for core area (USFWS 2011a, p. A-60). Additionally, OMRD and TMRD will improve, such that 15 of 22 BMUs will meet or be better than the OMRD research benchmark (currently 15 of 22 meet) and 16 of 22 BMUs will meet or be better than the TMRD benchmark (currently 13 of 22 BMUs meet) (USFWS 2011a, p. A-66).

The Access Amendment maintains the Lakeshore BMU as the only BMU in the SE recovery area managed by the IPNF that does not meet (i.e., is worse than) the benchmarks for TMRD and OMRD (USFWS 2011a, p. A-67). Importantly, the Lakeshore has never been expected to function like the other BMUs due to its small size and proximity to heavily used recreation areas and as such is managed as both MS1 (9,872 acres) and MS3 (8,093 acres). The Access Amendment fulfills one of the two major grizzly bear habitat management needs (the other being a Food Storage Order) for federal lands in the CYE and SE.

Table II-7. Status of standards for core, open motorized route density (OMRD) and total motorized route density (TMRD) for the CYE and SE BMUs. Values in blue reflect standards set in place in November 2011 Grizzly Bear Access Amendment. All or portions of BMUs 18-21 in the Cabinet-Yaak Recovery Zone are within the Action Area, while the remaining BMUs are located on the Kootenai and Lolo National Forests. Portions of Kalispell-Granite, Sullivan Hughes, Salmo-Priest, and Le Clerc BMUs in the Selkirk Recovery Zone are located within the CNF.

Recovery Zone	Bear Management Unit	Percent OMRD >1 mi/mi^2 (standard)	Percent TMRD >2 mi/mi^2 (standard)	Percent Core Area (standard)	Percent Federal Land
	1 (Cedar)	15 (15)	8 (15)	83 (80)	99

Recovery Zone	Bear Management Unit	Percent OMRD >1 mi/mi^2 (standard)	Percent TMRD >2 mi/mi^2 (standard)	Percent Core Area (standard)	Percent Federal Land
Cabinet Yaak	2 (Snowshoe)	18 (20)	16 (18)	77 (75)	94
	3 (Spar)	30 (33)	26 (26)	62 (59)	95
	4 (Bull)	38 (36)	29 (26)	62 (63)	84
	5 (St. Paul)	29 (30)	23 (23)	58 (60)	97
	6 (Wanless)	32 (34)	34 (32)	53 (55)	85
	7 (Silver Butte)	24 (26)	23 (23)	63 (63)	92
	8 (Vermilion)	32 (32)	24 (20)	55 (55)	93
	9 (Calahan)	28 (33)	27 (26)	58 (55)	90
	10 (Pulpit)	45 (44)	27 (34)	54 (52)	95
	11 (Roderick)	28 (28)	27 (26)	54 (55)	96
	12 (Newton)	43 (45)	32 (31)	56 (55)	92
	13 (Keno)	33 (33)	25 (26)	59 (59)	99+
	14 (NW Peak)	28 (31)	26 (26)	56 (55)	99+
	15 (Garver)	31 (33)	26 (26)	54 (55)	94
	16 (EF Yaak)	29 (33)	27 (26)	54 (55)	96
	17 (Big Cr.)	31 (33)	16 (26)	56 (55)	99
	18 (Boulder)	34 (33)	35 (29)	49 (55)	92
	19 (Grouse)[3]	60 (59)	59 (55)	32 (37)	54
	20 (North Lightning)	35 (35)	19 (20)	64 (61)	94
	21 (Scotchman)	37 (34)	27 (26)	63 (62)	81
	22 (Mt. Headley)	38 (33)	37 (35)	51 (55)	89
Selkirk	Blue Grass	35 (33)	28 (26)	50 (55)	96
	Long-Smith	21 (25)	14 (15)	73 (67)	92
	Kalispell-Granite	36 (33)	27 (26)	52 (55)	96
	Salmo-Priest	30 (33)	24 (26)	67 (64)	99
	Sullivan-Hughes	25 (24)	19 (19)	63 (61)	99
	Myrtle	30 (33)	20 (22)	60 (56)	85
	Ball-Trout	18 (20)	11 (13)	72 (69)	94
	Lakeshore	81 (82)	50 (56)	21(20)	86
	Le Clerc[4]	46	58	27	64

NOTE: The numbers used for road densities and Core Area include consideration of roads on State and private lands within grizzly bear habitat, even though the standards apply only to NFS lands.

Access management on lands in the SE administered by the CNF is dictated by its 2008 Motor Vehicle Use Map. This map is the culmination of a Travel Planning process that means motorized travel on the forest is now legally restricted to designated roads and trails identified on the Use Map. Off-road travel is prohibited except to access a campsite with 300 feet of a designated route. There are few open roads identified on the Use Map in recovery habitat and no motorized trails or areas identified in recovery habitat. The CNF has been educating the public

about using the Motor Vehicle Use Map, and enforcing the travel restrictions on the map. Use of roads in recovery habitat has declined as a result.

Small Population Size

Currently, small population size is being addressed by an augmentation program in the CYE and efforts to maintain linkage and connectivity with Canada and adjacent recovery zones in the U.S. The latter is discussed below under the heading Fragmentation and Genetic Isolation. To date, no augmentation has occurred in the SE

Augmentation

From 1990 to 1994 four female grizzly bears were captured in the Flathead River Valley of British Columbia and released in the Cabinet Mountains to augment the existing population. One of the transplanted bears and her cub died of unknown causes a year after release (Kasworm et al. 1998, p. 151). The remaining three bears were monitored until their collars fell off. The program was designed to determine if transplanted bears would remain in the target area and ultimately contribute to the population through reproduction. Three of four transplanted bears remained within the target area for more than one year. Though one of the transplanted bears produced a cub, the animal had likely bred prior to translocation and did not satisfy the criteria for reproduction with native males.

In 2005, the MFWP began augmenting the grizzly bears in the Cabinet Mountains. In 2005 and 2006, an adult female grizzly bear and a subadult female, respectively were transplanted from the North and South Fork Flathead River drainages to the Cabinet Mountains. No bears were transplanted in 2007 as no suitable females were captured. Two female grizzly bears were released during 2008. In October 2008 both of these bears were killed. In September 2009 an adult female and in July 2010 two subadult bears, a male and a female, were transplanted from the North Fork Flathead River drainage to the Cabinet Mountains. In 2011, an adult female and two males were moved into the Cabinet Mountains from the NCDE (Kasworm et al. 2011, p.2). It appears that the Cabinet Mountains segment of this population has actually increased in size since the start of augmentation in 1990). This increase is largely due to the reproductive output of a successful augmentation bear and her offspring which have also reproduced (Kasworm et al. 2011, p.2).

Kasworm et al. 2012, reported that fourteen bears have been added to the Cabinet Mountains population since 1990 (11 females and 3 males) through the augmentation effort. Three female bears and one male have left the target area and 4 bears are known to be dead. One of the bears that is known to be dead survived for 16 years in the Cabinet Mountains and produced at least 9 young. Those offspring are known to have produced at least 8 young. Few captures or hair snags of native bears in the Cabinet Mountains since the beginning of the augmentation program in 1990 suggest that the population was probably smaller than originally estimated (much fewer than 15 bears). The information also indicates that the Cabinet Mountains grizzly population would probably have disappeared without augmentation (ibid, pp.22, 25). The MFWP intends to continue the augmentation effort into the future with plans to relocate a young male and female

bear for the coming season (depending on suitability of captured bears) (J. Williams 06/12/2013 pers. comm.).

Fragmentation and Genetic Isolation

The effects of fragmentation and genetic isolation are closely related to the small size of the SE and CYE populations, which is discussed above.

Fragmentation

Presently, there has been limited movement of native bears between the Cabinet Mountains and Yaak portions of the CYE. One subadult male has crossed the Kootenai River moving from the Yaak to the Cabinets and then returning to the Yaak (W. Kasworm 8/24/2013 pers. comm.). However, there is currently no indication of successful movement and breeding activity by native bears resulting in gene flow between the two portions of the recovery zone. Grizzly bears augmented into the Cabinet Mountains have crossed Highway 2 during exploratory movements moving into the Yaak area and east back to the NCDE (ibid). We are encouraged by this recent data on grizzly bear movements in the CYE. In the past 5 years there have been more detections of Yaak grizzly bears (telemetry and hair snags) nearer the Kootenai River on the north side than in previous years (ibid).

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 affected by highways and associated development in Canada. Kasworm (2013 , p.3) reported the movements of an augmented female grizzly bear from the Cabinet Mountains through the Yaak to the NCDE north to Canada and then back to the CYE. The female grizzly has made this trip in two consecutive years.

The Kootenai Valleys Conservation Easement Program described above under Conservation Agreements, protects lands important for linkage and connectivity within the CYE. The MFWP recently secured the Kootenai Valleys Conservation Easement Project on 28,000 acres of Stimson Lumber lands along Highway 2 near the town of Troy. These lands represent the largest in-holding of private lands in the CYE recovery zone and are largely surrounded by KNF lands. Conservation of these lands maintains habitat necessary for linkage and connectivity between the Cabinet Mountain and Yaak River bears in the CYE.

One occurrence of grizzly bear movement between the CYE and SE was documented (Kasworm and Johnson 2008 as cited in USFS 2013a, p. 85) when a subadult male moved from the Purcell-South Yaak area into the southern Selkirks. There was one occurrence of a female migrant from the Canada portion of the SE moving into the US portion of the SE. In 2008 a grizzly bear shot in the Bitterroot Mountains originated from the Selkirk South (ibid). Additionally, linkage occurs between the Yaak bears in the CYE and Canada (USFWS 2011b, p. 11; Kasworm et al. 2010, pp. 47-58). Additional work is ongoing in the CYE recovery zone to further our understanding of linkage and movement (Kasworm et al. 2010, pp. 30-35) as well as the SE (Kasworm et al. 2010, pp. 31-35). Presently, there is no documented movement and reproduction

between grizzly bears in the Cabinet Mountains and Yaak portions of the CYE (i.e., grizzly bears are not moving between the two populations within the recovery zone). Grizzly bears including females with cubs have been documented in the Tobacco BORZ, between the NCDE and CYE ecosystems (Kasworm et al. 2012, p. 16). While bears augmented into the CYE have returned to the NCDE and back again (indicating some level of connectivity between the two recovery zones), no bears have yet been documented to have moved on their own from the NCDE to establish in the CYE (W. Kasworm 02/04/2013 pers. comm.). Recent DNA results show the first documented movement of a grizzly bear between the SE and the CYE (W. Wakkinen 07/02/2013 pers. comm). The DNA data indicates that a young male grizzly bear that was born in the SE successfully crossed into the CYE. The parents and sibling of the young male remained in the SE. More results from a recent DNA study in the CYE and SE will be available in 2013 or 2014 and will further improve our current understanding of linkages. Additionally, a female grizzly bear augmented into the Cabinet Mountains has moved from to the Yaak, over to the NCDE, north to Canada and back to the CYE in two consecutive years (Kasworm 2013).

Recent DNA results show the first documented movement of a grizzly bear between the SE and the CYE (W. Wakkinen 07/02/2013 pers. comm.). The DNA data indicate that a young male grizzly bear that was born in the SE successfully crossed into the Cabinet Mountains of the CYE. The parents and sibling of the young male remained in the SE.

Because the SE relies on connectivity with Canada for its long-term conservation, the cumulative effects of timber harvest, mining, recreation, and road building in B.C. have the potential to affect the SE grizzly bear population. The Nature Conservancy of Canada recently purchased 213 square miles of private land within the SE recovery zone in Canada. The location of these lands directly connects to an existing network of parks and wildlife management areas. Although many traditional uses will continue (e.g., timber harvest, snowmobile use), it will help create a contiguous area of more than 391 square miles, enough for wide-ranging animals like mountain caribou and grizzly bear to maintain connectivity with U.S. populations of these species.

Genetic Isolation

Proctor et al. (2012, p. 10) compiled and analyzed all known genetic and movement data for grizzly bears in 30 different study areas. The genetic data reflect fragmentation occurring on the landscape in the recent past (i.e., last 30-60 years) and may not reflect current, improved levels of connectivity and recent movement of grizzly bears between areas. In other words, current grizzly bear populations may not be as isolated as the genetic data of this study suggest. Therefore, it is useful to supplement these genetic data with movement data to get a complete picture of current population connectivity.

Proctor et al. (2012) found 4 males and 1 female using habitat between the Selkirk and Purcell Mountains, although there was no evidence indicating any migration between these 2 mountain ranges. Mace and Roberts 2012, Figure 3 - included in this biological opinion as Figure II-3) compiled the distribution of verified records of grizzly bears in and adjacent to the NCDE

recovery zone based on a compilation of telemetry data, mortality data, and DNA detections. They documented both male and female grizzly bears in habitat between the NCDE and CYE. We have documented one female grizzly bear with a cub that regularly uses habitat between the NCDE and CYE. She and her offspring spend most of their summer in the Salish Mountains of Montana less than 2 miles east of the edge of the CYE while denning within the boundaries of the NCDE recovery zone (Kasworm et al. 2008). There have been several different grizzly bears with cubs documented using habitat west of Highway 93, since 2002 (USFWS 2011b, pp.29-30).

Currently, it is not possible to tell if movements we are observing reflect an increase in bear movements or an increase in detection effort and technology (e.g., radio-transmitter collars; genetic techniques) (Proctor et al. 2012). These promising detections of grizzly bear movements should be tempered by the idea that detected movement does not mean migrants are breeding successfully. If there is no successful reproduction, then there is no genetic or demographic rescue occurring. There seems to be high mortality risk associated with migrant bears (Proctor et al. 2002, p. 158, Proctor et al. 2012). However, these data are helpful when considering how to most effectively manage and conserve the remaining grizzly bear populations in the lower 48 States. For example, these data emphasize the importance of maintaining demographic connectivity with Canadian populations and the small populations of the North Cascades ecosystem, SE, and CYE. Recovery of these small populations may eventually provide genetic and demographic rescue such that a grizzly bear population could establish in the Bitterroot Ecosystem.

The MFWP augmentation program is an important component of maintaining the genetic health of the population. Studies demonstrate that inbreeding depression can be reversed through augmentation (Hedrick 1995 and 2001; Keller and Waller 2002 as cited in USFWS 2006, p. A-17). Augmentation of the Cabinet Mountains segment aids in alleviating the isolation within that portion of the CYE. However, interchange of bears is ultimately dependent on creating and/or maintaining effective habitat linkage zones between the Yaak and the Cabinet Mountains (USFWS 2006, p. A-17), as well as between the NCDE and CYE and CYE and SE.

Human-Caused Mortality

Human-caused mortality is the leading source of mortality among radio-collared bears for both the CYE and SE.

Human-caused Mortality in the CYE

In the entire CYE, including B.C., between 1982 and 2012, a total of 67 known mortalities occurred for radio-collared grizzly bears from all forms (Table II-8). Of the known mortalities, 49 were human-caused (ibid) and 37 (76 percent) of these were ascribed a known cause of death. Of these 37 mortalities, 54 percent were attributed to poaching (8), mistaken identity during hunting (6), and self-defense (6) (i.e., involved gunshot wounds). Twelve additional bears were found dead, 9 were killed by gunshot as evidenced by a bullet, but exact cause is unknown and may be related to poaching, mistaken ID, or spiteful killing. All of these deaths occurred during the hunting season (W. Kasworm 02/04/2013 pers. comm.).

Table II-8. Number of known grizzly bear mortalities by cause in the CYE from 1982 through 2012 (W. Kasworm 02/04/2013 pers. comm.)

Type of Mortality	Canada	United States		Total
	BC	USFS	Other [1]	
Natural				
Conspecific predation [2]	0	3	0	3
Other	4	9	0	12
Subtotal	4	12	0	15
Human				
Poaching	0	2	6	8
Mistaken Identity	0	6	1	7
Self Defense	1	4	1	6
Management Removal/Sanitation	5	0	1	6
Legal Hunting (BC only)	3	0	0	3
Trapping (incidental)	1	1	0	2
Research	1	1	0	2
Train Collision	0	0	3	3
Motor Vehicle	0	0	0	0
Unknown	2	7	3	12
Subtotal	13	21	15	49
Unknown	0	2	0	2
Total	17	33	15	67

[1] Other = includes private, state, and railroad lands.
[2] Conspecific = grizzly bears killing grizzly bears.

Human-caused Mortality in the SE

In the SE from 1989 to present, there have been a total of 55 known grizzly bear mortalities (Table II-9). Of the known mortalities, 52 were human-caused and 40 (77 percent) of these were ascribed a known cause of death. Of the 40 known cause mortalities, more than half were the result of management removals due to human-bear conflicts or sanitation issues, primarily in B.C. (n=21). Another 22.5 percent were a result of poaching, mistaken identity during hunting, and self-defense, primarily in the U.S. (W. Wakkinen 07/02/2013 pers. comm.).

Table II-9. Number of known grizzly bear mortalities by cause in the SE from 1989- June 2013 (W. Wakkinen 07/02/2013 pers. comm.).

Type of Mortality	Canada	United States

	BC	WA and ID	Total
Natural			
Conspecific predation [2]	1	0	1
Other	0	0	0
Subtotal	1	0	1
Human			
Poaching	1	5	6
Mistaken Identity	0	2	2
Self Defense	1	0	1
Management Removal/Sanitation	21	2	23
Legal Hunting (BC only)	5	-	5
Trapping (incidental)	0	0	0
Motor Vehicle	2	0	2
Under Investigation	6	6	12
Subtotal	37	15	52
Unknown	1	2	3
Total	38	17	55

As demonstrated by the data, hunting for other species both in Canada and the U.S. in the SE and even more so in the CYE, adds to illegal or mistaken identity mortality of grizzly bears within the greater ecosystems. The province of B.C. and the states of Montana, Idaho, and Washington allow hunting for black bears, as well as other wildlife species, within and around the recovery zone. Legal hunting of grizzly bears no longer occurs[2] in the U.S. or B.C. but grizzly bears are taken by poachers and are mistakenly killed during the black bear or big game hunting season.

MFWP and IDFG have ongoing hunter outreach efforts. For example, MFWP has implemented a mandatory bear identification test since 2002 to help educate hunters in distinguishing species in an effort to reduce mistaken identity and grizzly bear mortality. MFWP also runs numerous public announcements in the media prior to and during hunting seasons, reminding hunters to be knowledgeable and use proper precautions in grizzly bear habitat. A grizzly/black bear identification test is available on the IDFG website and informational letters are mailed to black bear and elk hunters in the fall and spring (Wakkinen 2012, Research and Management Update, p. 2).

To address mortalities on private lands, the MFWP employs grizzly bear specialists that handle reports of "nuisance" grizzly bears and trap offending bears. In the CYE, the bear specialist works directly with the public to inform residents as to how to live in grizzly bear habitat without conflicts with bears, and assists them with nuisance black and grizzly bear conflicts. Nuisance

[2] Hunting of grizzly bears was legal in British Columbia until 2008 (British Colombia Ministry of Environment 2008, Mowat 2007, Mowat pers. comm. 2008 as cited *In* USFS 2013a, p. 66).

grizzly bears are typically habituated to seeking out human-related foods and garbage and pose serious threats to human safety, and often are destroyed. In the CYE, based on anecdotal information, there has been an increase in the number of residents seeking proactive help (e.g. fencing gardens, beehives and other attractants) to prevent conflict prior to an incident and fewer incidents involving problem bears have occurred during recent years (Annis 2013), and this represents notable progress toward reducing the potential for conflicts between people and grizzly bears, and in return reduces grizzly bear mortality.

While IDFG do not currently have full-time bear mitigation specialists like MFWP, there is a conservation officer whose duties are similar in many aspects to the MFWP grizzly bear specialist positions (W. Wakkinen 07/02/2013 pers. comm.). IDFG also employs wildlife biologists whose duties include bear management activities.

To date, there have been no grizzly bear deaths associated with food attractants on NFS lands in the SE or CYE recovery zones. There has been a concerted effort in the SE and CYE to improve sanitation on NFS lands throughout the ecosystem, with many campgrounds retrofitted—or scheduled to be retrofitted—with bear resistant garbage and/or food storage containers to reduce encounters and the potential for habituation. Additionally, all resort and recreation residence special use permits renewals in-or-near the recovery zones boundaries in the CYE and SE include sanitation guidelines as part of the special use permit. Finally, all National Forests that encompass the CYE and SE recovery zones have implemented mandatory food storage orders that assist in minimizing this impact (USFS 2013a, p. 73 and Appendix F). The IPNF Food Storage Order (encompassing the CYE, SE, and BORZ), fulfilled one of the two (the other being Access Management) major grizzly bear habitat management needs for federal lands in the CYE and SE.

Summary of Status of Grizzly Bears in the SE and CYE

In 2006, the Service identified the six priority needs to achieve grizzly bear recovery in the SE and CYE grizzly bear recovery zones (C. Servheen 2006 pers. comm. as cited *In* USFWS 2011a, p. A-32), and they pertain to the action area (see Section C. Environmental Baseline) as well:

1. Augment the Cabinet Mountains and Canadian Selkirks populations;
2. Limit human-caused mortality;
3. Enhance population linkage across Highways 2, 3, 200, 135, and 95;
4. Address the needs of bears outside the recovery zone line;
5. Inside the recovery zone, a) complete access management in most important areas and b) improve sanitation standards on public land;
6. Increase outreach and public involvement.

The following progress has been made since 2006 to address these concerns:

- Ongoing augmentation program in the CYE (need 1)

- Ongoing public education and outreach programs in both recovery zones (needs 2 and 6), including:
    - In Montana, hunter education since 2002; bear specialist programs since 2007 (MFWP 2013); and regular programs of public information and education within the CYE recovery zone by the IPNF and KNF (USFS 2013a, p. 73).
    - In Idaho, hunter education since 2010 (W. Wakkinen 07/02/2013 pers. comm.) and regular programs of public information and education within the SE recovery zone by the IPNF and cooperating agencies (IDFG and IDL) (USFS 2013a, p. 73).
- Implementation of the Kootenai Valleys Conservation Easement Project in the city of Troy (2012) in the CYE (need 3)
- Completion of the Access Amendment for BMUs and BORZ on NFS lands in the CYE and SE on the KNF and IPNF in 2011 (needs 4 and 5a)
- Implementation of food storage orders on all forests overlapping the CYE in 2011 and on the IPNF in the SE (need 5b).

The CYE grizzly bear population has a slightly declining trend, but improved since 2006. Since 2006, lambda (rate of change in the population) has improved and moved closer to stability (1.0) – an indication that the CYE grizzly bear population status is improving. Lands along Highway 2 have recently been secured through a conservation easement to protect important future linkage areas. Additionally, the MFWP continues its augmentation program and hunter education, outreach, and specialist programs. The augmentation efforts have resulted in increasing grizzly bear numbers in the Cabinet Mountains through successful reproduction of a relocated female and her offspring.

Although the SE population may be slowly increasing (Wakkinen and Kasworm 2004, pp.73-74) and reconnecting with adjacent populations, high levels of human-caused mortality and a lack of regulatory mechanisms in B.C. still threaten this population. The grizzly bear access amendment and the INPF and KNF Food Storage Order address the major grizzly bear habitat management needs for federal lands in the CYE and SE.

8. Climate Change

This section describes current climatic conditions, anticipated future conditions, and the anticipated effects on grizzly bears.

Current Conditions

Global warming of the past 50 years is due primarily to human-induced increases in heat-trapping gases, causing increases in global average temperatures, and changes in ocean heat content, precipitation, atmospheric moisture, and Arctic sea ice (Karl et al. 2009, p. 9). Analysis of various climate data for the Northern Hemisphere suggest that the rate of warming observed in the 20th century, as well as the magnitude of global temperatures from 1990 to 2004, is unprecedented in the past 2000 years (Moberg et al. 2005, p. 615).

At the national level, over the past 50 years, the U.S. average temperature has risen more than 2 degrees Fahrenheit (°F), precipitation has increased an average of about 5 percent, extreme

weather events, such as heat waves and regional droughts, have become more frequent and intense, and sea level has risen along most of the U.S. coast (Karl et al. 2009, p. 27). In addition, cold-season storm tracks are shifting northward and Arctic sea ice is declining. Ecosystem processes are affected by climate and by the concentration of carbon dioxide in the atmosphere (Janetos et al. 2008, p. 2). The diversity of living things (biodiversity) in ecosystems is itself an important resource that maintains the ability of these systems to provide the services upon which society depends. Many factors affect biodiversity including: climatic conditions; the influences of competitors, predators, parasites, and diseases; disturbances such as fire; and other physical factors. Human-induced climate change, in conjunction with other stresses, is exerting major influences on natural environments and biodiversity, and these influences are generally expected to grow with increased warming (Janetos et al. 2008, p. 2).

In the western U.S., both the frequency of large wildfires and the length of the fire season have increased substantially in recent decades, due primarily to earlier spring snowmelt and higher spring and summer temperatures (Westerling 2006, pp. 942-943). Changes in climate have contributed significantly to several major insect pest outbreaks in the United States and Canada over the past several decades. Drought and hot, dry weather have led to an increase in outbreaks of insects in the Columbia Basin, especially mountain pine beetle (ISAB 2007, p. 91). Even though there are few climate change studies specific to sub-regions, such as western Montana, there is some data available for the state. For instance, the Montana Climate Action Project website reports that warmer springs are making snow melt sooner, and early snowmelt leaves rivers low by summer's end. The website also shows that over the last century, the average temperature in Helena, Montana, has increased 1.3°F, and precipitation has decreased by up to 20 percent in many parts of the state.

Future Regional and Local Climate Conditions

The following information is summarized from the Kootenai and Idaho Panhandle National Forests Planning Zone (KIPZ) Climate Change Report (USFS 2010b) and IPNF Land Management Plan Draft (USFS 2011a).

An assessment on climate change for the planning zone (i.e., the area encompassed by the KNF and IPNF Revised Forest Plans) synthesized the most recent scientific information regarding how future climate change may impact forest resources and disturbance processes on the KNF and the IPNF (USFS 2010b, pp. i-vii).). This report concluded the average annual temperatures will increase 2.2°F by the 2020s and 3.5°F by the mid-21st century. The greatest temperature increases are predicted for the summer season. Precipitation predictions are considered less certain, but most of the climate change models project decreases in summer precipitation, increases in winter, and little change in the average. It is also predicted that some extreme events will occur more frequently or with greater magnitude, while others may be less frequent (i.e., more unusually warm periods and fewer really cold spells). Other research for the northern Rockies (Westerling et al. 2006, p. 943; Running 2006, p. 927; Morgan et al. 2008, p. 725) predicts warmer springs, earlier snowmelt, and hotter, drier summers with longer fire seasons and larger, more intense fires.

The report also concludes climate changes are likely to increase the frequency of large fire years in the Northern Rockies and that fire seasons will be longer. Some of the climate change modeling efforts has suggested that by the 2080s, the amount of area burned by wildfires in the Pacific Northwest region (including Idaho and western Montana) would double or triple. However, as explained in more detail in the KIPZ Climate Change Report, there are a number of key sources of uncertainty regarding this issue.

The potential influence of climate change on some of the key forest insects and diseases of the Northern Rockies is discussed in the KIPZ Climate Change Report (USFS 2010b, pp. i-vii). In addition, a literature review of climate change and forest diseases of Western North America is presented in Kliejunas et al. (2009, p. 2). These documents conclude that climate change will lead to reductions in tree health and will improve conditions for some insects such as bark beetles and damaging pathogens such as root diseases.

Over the last 50 years, average spring snowpack (April 1 snow water equivalent) has declined and average snowmelt runoff is occurring earlier in the spring. These trends are observed for northwestern Montana, the entire Pacific Northwest, and much of the western U.S. Since the available data is limited to the last 50 years, it is not clear whether these trends are persistent long-term trends or reflect short-term decade-to-decade variability that may reverse in coming years. Several recent studies of the same trends across the entire western U.S. have concluded that natural variability explains some, but not all, of the west-wide trend in decreasing spring snowpack and earlier snowmelt runoff.

Climate Change Effects to Grizzly Bears

Climate change trends in the Pacific Northwest region will be important to grizzly bears with respect to how these trends may affect denning behavior, foraging habitat availability, and fire-regimes.

Predicted decreases in snowpack levels may shorten the denning season as foods are available later in the fall and earlier in the spring. Spring and fall encounters between grizzly bears and people may therefore increase; escalating the mortality risk to bears during these times.

An additional effect of climate change could be changes in the availability of and distribution of foraging areas due to increasing temperatures and seasonal changes in precipitation. The extent and rate to which plant species and communities would be affected is difficult to predict. Changes in vegetative distributions may also influence other mammal distributions, including prey species like ungulates.

As described earlier, grizzly bears are opportunistic feeders and will consume almost any available food. Because grizzly bears are such successful omnivores, climate-induced vegetative changes may not have detectable, negative effects on grizzly bear populations in the lower 48 States.

An increase in the frequency of large-scale wildfires may result in reductions in forest cover and some types of foraging habitat, while potentially creating other types of foraging habitat, e.g. shrub, berry, and grassland forage areas.

Grizzly bears are habitat generalists and opportunistic omnivores, able to find resources in a wide variety of habitat conditions. It is difficult to predict how this large, wide-ranging species would respond to environmental changes associated with climate change. At this time, the scope and scale of such changes are unknown, and the effects (positive or negative) on grizzly bears would likely be variable across the landscape.

Through IPNF's participation in the IGBC, it is made aware of new findings relative to grizzly bears in the action area. If climate change affects the status of the grizzly bear such that we have new information relevant to our effect analysis below, reinitiation of the consultation may be necessary.

9. Analysis of the Species Likely to be Affected

Grizzly bears are a wide-ranging species requiring large, interconnected areas of suitable habitat. The preponderance of grizzly bear habitat in recovery zones in Montana and Idaho occurs on NFS lands. Grizzly bears on the IPNF occur in the CYE and SE recovery zones. Both recovery zones support small populations of grizzly bears. The IPNF Revised Plan Forest-wide direction describes the framework under which lands will be managed for the next 10 to 15 years on the Forest. This biological opinion considers the effects of implementation of the Revised Plan as well as the effects of Plan elements specific to the conservation of grizzly bears and grizzly bear habitat.

C. ENVIRONMENTAL BASELINE

The environmental baseline section is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat (including designated critical habitat, if applicable), and ecosystem, within the "action area" (USFWS and NMFS 1998, p. 4-22).

The "environmental baseline" includes:

- the past and present impacts of all Federal, State, or private actions and other human activities in an "action area,"
- the anticipated impacts of all proposed Federal projects in an "action area" that have already undergone formal or early section 7 consultation,
- and the impact of State or private actions that are contemporaneous with the consultation in process.

1. Action Area

As described in Section A., this biological opinion addresses the effects on grizzly bears related to the revision of the Forest Plan for the IPNF. Therefore, the action area is the entire IPNF. Currently, grizzly bears on the IPNF are most often using habitat within BMUs and BORZ - adjacent areas on the Forest identified as having recurring use by grizzly bears outside of the recovery zone. However, bears are also observed infrequently on other areas of the Forest and given the 10 to 15 year timeframe this plan will be in place, it is reasonable to assume that grizzly bears may occur in additional areas of the Forest during the life of the plan.

Within the action area, there are 6 BMUs in the SE recovery zone that are wholly within the IPNF and 2 BMUs with shared ownership between IPNF and CNF. Within the CYE recovery zone there are 4 BMUs that are wholly within the IPNF, and 2 BMUs with shared ownership between the IPNF and KNF (Table II-10). Additionally, there is 1 BORZ area associated with the CYE and 2 BORZ areas associated with the SE on IPNF lands (Table II-11). Within the SE recovery zone, the action area does not include the LeClerc BMU which is almost entirely located in and managed by the CNF, Washington, and the IDL BMU, which is primarily owned and managed by the state of Idaho. Figure II-2 shows the location of the IPNF, BMUs and BORZ associated with the CYE and SE.

Table II-10. CYE and SE BMUs, acreage, status of and standards for open motorized route density (OMRD), total motorized route density (TMRD) and core area as of bear year 2011, and percent federal land in the action area.

BMU Name (ID)	Total Size (Acres)	Percent OMRD>1mi/mi^2 (standard)	Percent TMRD>2mi/mi^2 (standard)	Percent Core Area (standard)	Percent Federal Land
CYE BMUs					
Keno (13)	51,235	33 (33)	25 (26)	59 (59)	99+
NW Peak (14)	83,027	28 (31)	26 (26)	56 (55)	99+
Boulder (18)	62,379	34 (33)	35 (29)	49 (55)	92
Grouse (19)	65,086	60 (59)	59 (55)	32 (37)	54
North Lightning (20)	68,724	35 (35)	19 (20)	64 (61)	94
Scotchman (21)	62,288	37 (34)	27 (26)	63 (62)	81
Total	392,739				
SE BMUs					
Blue Grass	57,325	35 (33)	28 (26)	50 (55)	96
Long-Smith	65,735	21 (25)	14 (15)	73 (67)	92
Ball-Trout	57,907	18 (20)	11 (13)	72 (69)	96
Myrtle	63,781	30 (33)	20 (22)	60 (56)	99
Salmo-Priest	87,115	30 (33)	24 (26)	67 (64)	99
Sullivan-Hughes	78,210	25 (24)	19 (19)	63 (61)	85
Kalispell-Granite	85,641	36 (33)	27 (26)	52 (55)	94
Lakeshore	17,972	81 (82)	50 (56)	21(20)	86
Total	513,686				

Data provided reflect on-the-ground access conditions during the 2011 "bear year" (i.e. April 1 – November 30 in the Cabinet-Yaak ecosystem and April 1 – November 15 in the Selkirk ecosystem).

2. Status of the Species within the Action Area

Within the action area, the status of grizzly bears is the same as that described above for the overall status of the grizzly bear populations in the CYE and SE (see Section B. Status and Distribution).

3. Factors Affecting Species Environment within the CYE and SE Portions of the Action Area

As discussed under Status of the Species, the primary factors affecting the SE and CYE in the action area include inadequate habitat conservation measures; human-caused mortality; small population size; and fragmentation and genetic isolation. Below, we summarize the status of these factors within the action area. For any other factors, the conditions in the action area are the same as those described for the entirety of the recovery zone and are largely outside the jurisdiction of the IPNF.

Habitat Conservation Measures

The primary factor affecting habitat conservation in the action area includes access management.

As reported under Status of the Species, the IPNF recently completed a Forest Plan amendment providing direction for access management in grizzly bear BMUs within the CYE and SE recovery zones. The current and anticipated status of the BMUs in the action area relative to the Access Amendment is in Table II-10.

Once the standards are attained (anticipated by approximately 2019), 5 of the 6 BMUs in the CYE action area will meet the research benchmark for core area (USFWS 2011a, p. A-60). Additionally, OMRD and TMRD will improve or be maintained such that 5 of the 6 BMUs in the CYE will meet (or be better than) the OMRD research benchmark (Northwest Peak) and 5 of 6 BMUs will meet (or be better than) TMRD benchmark: N. Lightning (Table II-10).

Similarly, 7 of 8 BMUs in the SE would have at least 55 percent core area, increasing core area in the affected area by about 4,111 acres to 315,378 acres or 61.4 percent of the affected BMUs. This would represent an increase of 17,143 acres of core area since 2000 (USFWS 2011a, p. A-61). Under the Access Amendment, just one BMU in the SE would continue to exceed the OMRD and TMRD research benchmarks and not achieve desired core (Lakeshore BMU) (USFWS 2011a p. A-67).

Another key feature of the Grizzly Bear Access Amendment was the re-evaluation of BORZ boundaries. There are three BORZ areas on the IPNF: two (Priest and Pack River) near the SE and one (Mission-Moyie) near the CYE. In BORZ, the Access Amendment limits linear miles of open and total permanent roads to no more than the existing baseline as displayed in Table II-11.

Table II-11. Motorized access conditions for BORZ associated with the CYE and SE (USFS 2013a, p. 75)

Bears Outside Recovery Zone	Grizzly Bear Recovery Zone	Total Size (Acres)	IPNF Lands			Private and State Lands		
			Total Area (Acres)	Total Roads (Miles)	Open Roads (Miles)	Total Area (Acres)	Total Roads (Miles)	Open Roads (Miles)
Priest Lake	Selkirk	80,733	75,793	319	317	4,940	36.1	33.6
Pack River	Selkirk	33,869	28,097	44	39	5,772	6.9	6.9
Mission-Moyie[1]	Cabinet-Yaak	71,545	58,472	231	203	13,073	112.8	105.7

1. Formerly called 'Deer Ridge.'

In 2004, the Service issued a biological opinion on the IPNF's original Access Amendment (USFWS 2004). We determined that the amendment was not likely to jeopardize grizzly bears. The amendment's Record of Decision and the Service's biological opinion were challenged in court. The biological opinion was upheld in the District Court. However, the court remanded the decision back to the Forests for further consideration of requirements under NEPA. In 2011, the Forests proposed a revised access amendment. The Service found the revised amendment was more conservative (good for bears) than the 2004 access amendment. In 2011, we issued a biological opinion on the revised amendment and determined that it was not likely to jeopardize grizzly bears. We expect that eventual achievement of the motorized access and security standards in the amendment will create conditions that are conducive to supporting adult female grizzly bear home ranges across the SE and CYE recovery zones. We determined that the amendment would contribute to recovery of the grizzly bear population(s) in the CYE and SE. The amendment is now being implemented by the Forest.

The grizzly bear access amendment fulfills one of the two major grizzly bear habitat management needs for federal lands in the CYE and SE (the other being a Food Storage Order). The recent implementation of the Grizzly Bear Access Amendment, which incorporates road density and core area standards based on the research by Wakkinen and Kasworm (1997, pp. 6-8), is expected to reduce the potential for both displacement of grizzly bears from key habitat and human-caused mortality on IPNF lands. This will be achieved by generally moderating the miles of road in grizzly bear habitat and providing large blocks of habitat where motorized use of roads and trails is prohibited.

The population-level effects of the amendment will require time to become evident because of the low reproductive rate of grizzly bears, which results in a population that increases or decreases slowly over time. Long term monitoring of the population will continue to verify trends. Even with implementation of the amendment, some level of human-caused mortality is likely to persist on private and to a lesser extent, public lands.

Small Population Size

Within the action area, the Access Amendment will reduce the risk of human-caused mortality on IPNF lands.

Fragmentation and Genetic Isolation

Highways, railroads, and private land uses contribute to fragmentation and increase the risk of isolation. Ongoing concerns in the action area include U.S. Highway 1, 2, and 5. Highways 1 and 5 bisect the Cabinet and Selkirk Mountain ecosystems, and Highway 2 bisects the Yaak and Cabinet Mountains ecosystem.

Servheen et al 2003, (p. 13) identified the main areas for concern associated with linkage corridors between the SE and CYE. Primarily these are associated with vehicle transportation corridors and include U.S. Highways 2 and 95, and Idaho State Highways 1 and 57. Namely U.S. Highways 95 and 1 completely separate the two recovery zones. Also, significant amounts of public and private development have occurred in the Purcell Trench and the communities of Sandpoint and Bonners Ferry, Idaho. Additional fragmentation is occurring in the area surrounding Priest Lake, Idaho (Servheen et al 2003, p. 26).

In 2013, the first movement of a grizzly bear between the SE and the CYE was documented. Based on DNA data, a young male grizzly bear who originated in the SE had successfully crossed into the CYE (W. Wakkinen 07/02/2013 pers. comm.). The parents and sibling of the young male still remain in the SE. Grizzly bears augmented into the Cabinet Mountains have made exploratory movements across Highway 2, and one male from the Yaak has crossed to the Cabinet Mountains. However, to date, there is no movement and reproduction between bears in the Yaak and Cabinet Mountains (Kasworm 08/23/2013pers. comm.). As discussed above (Status), augmentation moderates the effects of this isolation. The recent purchase of the Kootenai Valleys Conservation Easement Project also conserves important lands in the corridor for efforts to maintain connectivity.

The 2011 access amendment limits new road construction in the BORZ and limits linear miles of road to no more than the existing baseline open and total permanent roads to prevent additional impacts of road densities on grizzly bears between the CYE and NCDE and between the CYE and SE.

Human-caused Mortality and Other Factors

Other factors affecting grizzly bears on IPNF lands in the action area as described in the Revised Plan terrestrial biological assessment (USFS 2013a) include attractants (which can lead to human-caused mortality), recreation, grazing, motorized over snow routes, and mining.

Attractants

Attraction of grizzly bears to improperly stored food and garbage is identified as one of the principal causes of grizzly bear mortality, especially on private lands. Information and education as well as food storage programs can reduce human-bear conflicts contributing to grizzly bear mortality (USFWS 2011b, p. 106). The IPNF and cooperating agencies (including Idaho

Department of Fish and Game, Idaho Department of Lands) maintain and financially support a regular program of public information and education within the SE and CYE recovery zones (USFS 2013a, p. 73).

To date, there have been no grizzly bear deaths associated with food attractants on NFS lands in the SE or CYE (USFS 2013a, p. 73). There has been a concerted effort to improve sanitation on NFS lands throughout the ecosystem, with many campgrounds retrofitted—or scheduled to be retrofitted—with bear resistant garbage and/or food storage containers to reduce encounters and the potential for habituation. Additionally, all resort and recreation residence special use permits renewals in-or-near the recovery zones boundaries include sanitation guidelines as part of the special use permit. Most significantly, on September 29, 2011 the IPNF implemented a mandatory food storage order to assist in minimizing this impact (USFS 2013a, Appendix F).

Recreation

The IPNF received an estimated 855,000 visits between October 2002 and September 2003 (USFS 2009, p. 161). Approximately half of these total visits occurred in the Forest's north zone, which includes the SE and CYE recovery zones. As noted above, the access management program is expected to reduce the potential for human-caused grizzly bear mortality on the Forest by moderating the miles of road in grizzly bear habitat and providing large blocks of habitat where motorized use of roads and trails is prohibited.

Many visitors to NFS lands remain fairly close to motorized access routes according to the Revised Plan Draft EIS analysis (USFS 2011b, pp. 213, 265). To reiterate the information presented in the section above, *Grizzly Bear Mortality in the CYE*, recreational use such as hiking on trails or driving scenic routes does not appear to result in conflicts leading to mortality of grizzly bears. Most grizzly bear deaths on the CYE and SE on NFS lands are hunting related or occur during the hunting season (W. Kasworm 02/04/2013 pers. comm.; W. Wakkinen 07/02/2013 pers. comm.). Further, MFWP and IDFG have hunter education and public outreach programs and bear specialist positions to reduce the potential for conflict between grizzly bears and hunters and recreationists, in an effort to reduce grizzly bear mortality. Refer to Cumulative Effects section for details on hunter education and public outreach programs and bear specialist positions.

Grazing

There are two cattle grazing allotments covering 14,328 acres of grizzly bear habitat situated in two BMUs within the SE portion of the action area. Portions of two additional cattle grazing allotments (approximately 3,930 acres) are situated in the Priest River BORZ within the IPNF Proposed Action Area. There are no sheep allotments. There are no allotments on IPNF lands in the CYE. To date, there have been no grizzly bear/livestock conflicts associated with livestock use of IPNF lands.

Motorized Over-the-Snow Routes

As discussed above under section B. Status, 3. Habitat Requirements, our primary concern related to motorized over-snow routes as it relates to grizzly bears is that disturbance from

snowmobiles may be most consequential shortly before or after den emergence of a female with cubs. Females and their cubs remain in the den site area for several weeks after emergence from dens (Haroldsen et al. 2002, p. 33; Mace and Waller 1997, pp. 37-38). Females with cubs have high energetic needs, and cubs have limited mobility for several weeks after leaving the den. Disturbance levels that cause a female to prematurely leave the den in spring, or move from the den area, could impair the fitness of the female and safety of the cubs. If cubs attempt to follow their mother, they will likely experience decreased fitness and the family group may be pushed to less suitable habitat. To date, litter abandonment by grizzlies due to snowmobiling activity has not been documented in the lower 48 States (Hegg 2010, pp. 26-27; Servheen 2010 pers. comm. *In* USFWS 2011a) nor has other detectible or measurable adverse effects on grizzly bears from snowmobile use been substantiated (Mace and Waller 1997, p.41; USFS 2006, pp.3-263, 3-373).

There are 14 miles of groomed routes located in approximately 118,200 acres of available modeled grizzly bear denning[3] habitat within the SE portion of the Action Area. Additionally, there are 26 miles of groomed trails within 74,750 acres of modeled grizzly bear denning habitat within the CYE portion of the IPNF. Off-route use occurs on approximately 7,440 and 14,250 acres of the IPNF portion of the SE and CYE recovery zones, respectively. Both on and off-route snowmobile travel combined occurs on about six and 19[4] percent of modeled denning habitat on the IPNF portion of the SE and CYE, respectively. However, the actual magnitude and location of this use during the post-emergence period (i.e. after April 1) is greatly reduced due to a combination of limited public participation in the sport after April 1, and deteriorating snow conditions (USFS 2013a, p. 77). Table II-12 summarizes the existing over-the-snow motorized access within BMUs and denning habitat on the IPNF. Snowmobiling also occurs on approximately 95 miles of groomed trails in the Priest and Pack River BORZ. There are no groomed trails within the Mission-Moyie BORZ.

The IPNFs is in the process of preparing a Winter Travel Plan that addresses over-the-snow motorized use in the SE. It is anticipated that this will be completed in the next two-to-four years.

[3] Grizzly bear denning habitat was modeled separately for the two ecosystems using local research data
[4] Over-the-snow motorized use occurs on approximately nine percent of the entire Cabinet-Yaak recovery zone (USFS 2013a, p. 76).

Table II-12. Current motorized over-the-snow access within grizzly bear recovery zones on the IPNF (USFS 2013a, p. 77).

Type of Allowed Access	Selkirk Recovery Zone		Cabinet-Yaak Recovery	
	BMU	Denning	BMU[1]	Denning
Total Area with the IPNF (acres)	384,560	118,200	247,460	74,760
Total Area where Over-the-Snow Use is Allowed	320,700	99,960	246,400	74,760
Groomed Over-the-snow Routes (miles) **(miles)**	130[3]	14[3]	86	9
Over-the-snow Motorized Use (acres)[2]	19,930[3,4]	7,440[3,4]	47,740	14,250

[1]Includes IPNF data from the Boulder, Grouse, North Lightning, Northwest Peaks, Keno, and Scotchman BMUs only. Total recovery zone=1,649,300 acres; total denning=489,720 acres.
[2] Many of these areas have limited accessibility for snowmobiling off-route due to tree densities and topography (USDA Forest Service 2011).
[3] The Selkirk Recovery Zone includes the 2007 federal court order to protect woodland caribou, which will be lifted once winter travel planning is complete (likely 2014-15). The current use reflects this closure.

[4]Motorized over-the-snow activity is precluded on 95 percent of these acres from March 15 – 30 or April 1 – June 30 under closure orders.

Mining

There are no major mining operations on the IPNF at this time. There are currently 1,232 Plans of Operations for locatable minerals on the IPNF. Of these, 17 are located in grizzly bear recovery zones (SE=4; CYE=13) and 14 are located in BORZ (SE=3 – Priest and Pack River; CYE=11 – Mission-Moiye). The majority of on-going activities are related to maintenance of existing facilities and most locatable mineral operations are less than five acres in size.

There are approximately 434 active mineral material (sand, rock, gravel) pits and quarries within the IPNF and of these 62 sites are located in the recovery zones (SRE=26; CYE=36) and 19 are located in the BORZ (SE=8; CYE=11). Sites are typically from less than one acre to five acres in size.

There are no leasable minerals located on the IPNF at this time and potential is considered "low".

Overall, there are limited existing effects on grizzly bears from material mining operations on the IPNF and effects are similar to those related to roads since most sites are adjacent to access routes (L. Allen 08/21/2013 pers. comm.).

D. EFFECTS OF THE ACTION

The effects of the action are considered along with the status of the species, the environmental baseline, and cumulative effects (defined and analyzed below) for purposes of preparing a biological opinion on a proposed Federal action (USFWS and NMFS 1998, p. 4-23).

"Effects of the action" refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, and that will be added to the environmental baseline. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. Indirect effects are those that are caused by the Proposed Action and are later in time, but still are reasonably certain to occur. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. [50 CFR §402.02]

1. Factors to be Considered

This section considers the effects to grizzly bears from implementation of the Revised Plan direction as guided by the Revised Plan elements (goals, objectives, desired condition, standards, and guidelines). It also considers how the Revised Plan direction is moderated by elements specific to the conservation of grizzly bears and grizzly bear habitat.

The Revised Plan proposes direction for the management of NFS lands across seven MA (Table II-2): Wilderness; Eligible Wild and Scenic Rivers; Special Areas; Established/Proposed Research Natural Areas, Backcountry; General Forest; and Primary Recreation Areas. Allocation to a specific MA is not intended to mandate or direct the IPNF to propose or implement any action; rather the themes provide an array of allowed and prohibited activities regarding: timber harvest; commercial use; personal use; fire and wildfire; grazing; recreation; motorized use; road construction/reconstruction; and mineral activities. In our analysis of effects of the Revised Plan, we will discuss the effects of the revised plan and application of the elements in the MAs relative to BMUs or BORZ, which are the units of analysis commonly used to describe effects on grizzly bears.

Notably, the Revised Plan also implements the previously consulted-on Access Amendment (USFS 2011c). The contents, data, analyses, and conclusions of the *Biological Opinion Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones on the Kootenai, Idaho Panhandle, and Lolo National Forests* (USFWS 2011a) are incorporated in this analysis in their entirety. In subsequent sections of this analysis we cite page numbers from the Access Amendment that support a particular conclusion; however, we considered the entirety of that document for the purposes of our analysis of the Revised Plan.

Except in the case of the motorized route densities and over-snow motorized use, this biological opinion does not provide an analysis for effects of specific actions. Rather, this analysis is a broad-scale examination of the types of projects and activities conducted or contemplated under the Revised Plan that could potentially occur in grizzly bear habitat and result in effects on grizzly bears. The IPNF is responsible for section 7 consultation (if applicable and appropriate) on all future projects conducted under the Revised Plan that may affect the grizzly bear or its habitat, even if those projects are consistent with Revised Plan.

As mentioned, the exception to this broad-scale analysis is motorized route densities and over-snow motorized use. For motorized route densities, the science is clear that above prescribed average densities, bears may suffer adverse effects that can lead to significant impairment of grizzly bears' ability to feed, breed, or shelter. Further these densities have been carefully examined, monitored and reported by the USFS. Hence, we are able to ascertain the level of adverse effects on grizzly bears related to road densities, and that analysis, previously conducted in our consultation on the 2011 Access Amendment, is brought forward in this analysis as is the associated incidental take statement. For over-snow motorized use (i.e. snowmobile use) the Forest examined, monitored, and reported the amount of denning habitat that was impacted by late season snowmobile use. The best available science and information suggests that recently emerged females with cubs would be vulnerable to adverse disturbance effects of snowmobile use near den sites during late spring. Thus, we are able to ascertain the level of adverse effects and provide surrogate measures of incidental take of grizzly bears related to late-season snowmobile use.

Our analysis will be used to determine the potential for the Revised Plan direction and effects from motorized access and snowmobile use in grizzly denning habitat to jeopardize the affected populations of grizzly bears (CYE and SE). In our analysis of effects of the Revised Plan, we will discuss the effects of the revised plan and application of the elements in the MAs relative to BMUs, subunits, or BORZ, which are the units of analysis commonly used to describe effects on grizzly bears (see Section A.1).

2. Analysis of Effects of the Action

The following sections analyze the direct and indirect effects of the implementation of the elements of the Revised Plan on grizzly bears. The effects will be discussed by broad categories of risk factors as identified in the Environmental Baseline section (above) and in the BA for the action area. The effects of the Revised Plan are discussed under the following, often overlapping categories:

- **Access management** including: roads, secure habitat, and motorized over-snow use.
- **Habitat management** including vegetation management, fire management, and linkage.
- **Human-caused mortality risk to grizzly bears** including attractant/food storage and information and education programs and grazing allotments.
- **Other Potential Effects** such as mining proposals, collection of forest products, and special uses.

For each category of effect, we begin with a general summary of what the science currently tells us about the potential impacts on grizzly bears and grizzly bear habitat. This is followed by an analysis of the specific effects of the proposed action on grizzly bears and grizzly bear habitat.

Effects of Access Management on Grizzly Bears Under the Revised Plan

Grizzly bear habitat security is primarily described in terms of availability of secure habitat. Grizzly bear habitat security is primarily achieved by managing motorized access which — (1) minimizes human interaction and reduces potential grizzly bear mortality risk; (2) minimizes

displacement from important habitat where energetic requirements can be met with limited disturbance from humans; and (3) minimizes habituation to humans (Mattson et al. 1987, pp.19-20; McLellan and Shackleton 1988, pp.458-459; McLellan 1989, p. 1856; Mace and Manley 1993, pp.24-27; Mace et al. 1996, pp. 1402-3; Wakkinen and Kasworm 1997, pp. 22-26). This section addresses effects of roads; secure habitat; and motorized over-snow use on grizzly bears under the Revised Plan.

Effects of Roads on Grizzly Bears Under the Revised Plan

General Effects of Roads on Grizzly Bears

The presence of roads and human activity associated with roads creates some of the most pervasive and chronic effects on grizzly bears and their habitat.

Grizzly bears generally respond to (or are affected by) roads and human presence in four ways. First, they may be disturbed by human presence, responding with a relatively short term – short distance response (Mueller et al. 2004, pp. 44-45). Second, they may be displaced from highly roaded areas and areas near roads (McLellan and Shackleton 1988, p.456; Mace et al. 1996, p. 1403), responding with a longer term avoidance response and movement to another area. When grizzly bears avoid roaded areas, they forgo the resources in these areas, which may result in under-use of key habitats. They may also be displaced into competition with other grizzly bears, or conflicts with humans. Third, grizzly bears may become habituated to human activities and roads but then expose themselves to a greater probability of encounter with humans (and hence mortality) (Schwartz et al. 2010, p.661-662). And fourth, roads facilitate human access into grizzly bear habitat, which directly or indirectly increases the risk of mortality to grizzly bears (McLellan and Shackleton 1988, p.459; Mace et al. 1996, pp. 1402-1403). The relationship of grizzly bears and roads is further described in detail in our biological opinion on the Access Amendment (USFWS 2011a pp. A-48 through A-55).

Effects of Roads on Grizzly Bears in the Action Area

In November 2011, the Kootenai, Idaho Panhandle, and Lolo National Forests completed the Access Amendment which set standards and guidelines for motorized access within the CYE and SE recovery zones (USFS 2011a). That direction is summarized in the proposed action and described in detail in Appendix E of the USFS Terrestrial BA (2013a) and in the USFS 2010 Biological Assessment and associated Supplement (USFS 2010a, 2011d). The Access Amendment established standards for core area, OMRD, and TMRD for each BMU in the affected recovery zones (SE and CYE) (USFS 2011a). These standards are calculated on a BMU basis using a GIS and moving-windows routine. The status of BMUs related to the amount of core area and OMRD and TMRD within each BMU are reported to the Service annually.

The Access Amendment established timeframes within which all standards in individual BMUs in the SE and CYE will be met. The Revised Plan will not alter these timeframes. The BMUs will be in compliance with all standards by 2019. Actual accomplishment dates will depend on management priorities, funding, and the completion of required environmental analyses under NEPA. The current status of these standards by BMU is presented in Table II-10 above. The Access Amendment also established the amount of administrative use that may occur on each

individual gated road within the recovery zone, based on the bear year (spring, summer and fall). Each Ranger District retains a count of use that occurs by road and reports that information to the Service in the spring of each year. Lastly, the Access Amendment updated the BORZ boundaries and limits linear miles of open and total permanent roads to the existing baseline condition in BORZ. The status of roads in BORZ is included in Table II-11.

Forest-wide desired condition FW-DC-AR-07 trends the forest towards: "A transportation system is in place that provides safe and efficient public and administrative access to the Forest for recreation, special uses, other forest resource management, and fire management activities….The transportation system and its use have minimal impacts on resources including threatened and endangered species….Unauthorized roads and trails are no longer created." The Proposed Action reduces the amount of area where wheeled motorized access can occur within the grizzly bear recovery zones by approximately 34,758 acres in the SE and 29,682 acres in the CYE (Tables II-13 and II-14).

Forest-wide desired conditions FW-DC-WL-01, 02, 03, and 04, and 05 and Geographic-wide desired conditions GA-DC-WL-PR-02, GA-DC-WL-LK-03, and GA-DC-WL-PO-02 emphasize the need for large remote areas with low levels of disturbance so that grizzly bears have the necessary space and habitat unhampered by human activities.

Any proposed roads under the Revised Plan will adhere to the requirements of the Access Amendment or require an amendment to the Plan. Hence, we anticipate that the Revised Plan's effects of roads on bears will be the same as previously analyzed in our Access Amendment Biological Opinion (USFWS 2011a, pp. A-48-55 and A-66-68).

Table II-13. Acres (percent) of grizzly bear habitat by allowable uses and activities under the Existing Plan versus the Proposed Action Management Area Direction. (The magnitude of actual use and activity is regulated by the 2011 Access Amendment design criteria in regards to motorized access (USFS 2011a) as well as other management direction and available budgets.)

Allowable Uses Under Forest Plan Management Area Direction	Existing Forest Plan		Proposed Action	
	Selkirk	Cabinet-	Selkirk	Cabinet-
	Recovery Zone Acres (% of Total[1])			
Timber Harvest	296,966 (77)	219,540 (88)	291,066 (76)	217,146 (87)
Timber Production	232,261 (60)	142,349 (57)	0	0
Commercial Use – Special Forest Products & Firewood	384,556 (100)	248,582 (100)	284,031 (75)	215,822 (87)
Personal Use – Special Forest Products & Firewood	384,556 (100)	248,582 (100)	314,605[2] (83)	221,305 (xx)
Planned Fire Ignition	377,260 (98)	245,315 (99)	379,895 (99)	245,845 (99)
Natural, Unplanned Fire Ignitions to meet Resource Objectives	54,726 (14)	23,352 (9)	374,081 (97)	241,245 (97)
Grazing	323,825[3] (84)	225,230[3] (91)	290,227 (75)	216,705 (87)
Wheeled Motor Vehicle	320,706 (83)	246,387 (99)	285,948 (74)	216,705 (87)
Over-the-snow Motor Vehicle[4]	320,706 (83)	246,387 (99)	303,595 (79)	216,405 (87)
Road Construction (permanent or temporary)	284,143 (74)	188,930 (76)	284,082 (74)	216,793 (87)
Minerals – Leasable	158,587 (41)	94,194 (38)	374,664 (97)	248,582 (100)
Minerals – Materials	348,180 (91)	214,278 (97)	165,353 (43)	133,986 (54)

[1]Based on total amount of habitat available on NFS lands in the respective recovery zones, i.e. Selkirk-384,556 acres; Cabinet-Yaak=248,582 acres (Table 18).

[2]With no motorized equipment allowed on 65,320 acres in the Selkirk RZ (wilderness/recommended wilderness MAs).

[3]With no increase in existing allotments and no sheep on 37,935 of the Selkirk RZ and 138,494 acres of the Cabinet-Yaak RZ.

[5]Does not include the current court-ordered snowmobile closure in the calculations.

Table II-14. Summary of the changes between the existing plan and revised plan in allowable uses in grizzly bear recover zones.

Allowable Uses	Selkirk Recovery Zone (Acre)			Cabinet-Yaak Recovery Zone (Acres)		
	Existing Plan	Proposed Action	Difference	Existing Plan	Proposed Action	Difference
Timber Harvest	296,966	291,066	-5,900	219,540	217,146	-2,394
Timber Production	232,261	0	-232,261	142,349	0	-142,349
Commercial Use	384,556	284,031	-100,525	248,582	215,822	-32,760
Personal Use	384,556	314,605	-69,951	248,582	221,305	-27,277
Planned Fire Ignition	377,260	379,895	+2,635	245,315	245,845	+530
Natural, Unplanned Fire	54,726	374,081	+319,355	23,352	241,245	+217,893
Grazing	323,825[3]	290,227	-33,598	225,230	216,705	-8,525
Wheeled Motor Vehicle	320,706	285,948	-34,758	246,387	216,705	-29,682
Over-the-snow Motor Vehicle[4]	320,706	303,595	-17,111	246,387	216,405	-29,982
Road Construction	284,143	284,032	-61	188,930	216,793	+27,863
Minerals – Leasable	158,587	374,664	+216,077	94,194	248,582	+154,388
Minerals - Materials	348,180	165,353	-182,827	214,278	133,986	-80,292

In summary, the Access Amendment established the following standards for the action area (pp. A-55-56):

1. Just one BMU in the SE will not meet research benchmark for core, TMRD, and OMRD: Lakeshore.
2. OMRD standards for 5 of 6 BMUs in the CYE will meet or be better than the research benchmark.
3. TMRD standards for 5 of 6 BMUs in the CYE will meet or be better than the research benchmark.

4. Core standards for 5 of 6 BMUs in the CYE will meet or be better than the research benchmark.

For the BMUs that will not achieve OMRD and/or TMRD benchmarks in the CYE and SE, we determined that maintenance of good quality core areas within the BMUs may lessen the overall displacement impacts to grizzly bears related to the relatively high OMRD and TMRD outside the core by providing ample amounts of relatively secure habitat within home ranges (USFWS 2011, p.A-67). Nevertheless, varying degrees of adverse effects are anticipated in any BMU not meeting the research benchmark for core area, OMRD, or TMRD (USFWS 2011b, p.83-84), depending upon how far or near the benchmark each parameter lies.

One of eight BMUs in the SE (Lakeshore) and one of the six BMUs (Grouse) in the CYE action area may never be capable of providing the conditions that research has indicated needed to support an average female home range. These BMUs are affected by small size and/or private ownership and /or other constraints. Therefore, for these BMUs, the Access Amendment established grizzly bear habitat management standards at levels that may not be capable of providing the full suite of home range needs of the average adult female grizzly bear.

Another key feature of the Access Amendment was the re-evaluation of BORZ boundaries, which limits linear miles of open and total permanent roads to the existing baseline condition for BORZ areas (USFWS 2011a, p. A-71-73). The status of motorized routes in BORZ is presented in Table II-11. The requirements of the Grizzly Bear Access Amendment related to BORZ will continue under the Proposed Action through implementation of FW-STD-WL-02.

The presence of grizzly bears in BORZ indicates that some bears have apparently acclimated to what research indicates would be less-than-optimal conditions as far as road management, and at least in the short-term, seem able to find and secure the resources necessary for their needs and avoid human encounters resulting in mortality. However, our analysis of effects of roads in BORZ on grizzly bears remains the same as that presented in our Access Amendment Biological Opinion (USFWS 2011a, pp. A-71 to A-72, A-84). Briefly, we determined that while bears are using BORZ, we expect some ongoing adverse effects on grizzly bears attempting to use some portions of these areas as a result of the existing roaded conditions. We also stated that we expect that a number of grizzly bears will use these areas despite some level of adverse conditions, including females, albeit at lower densities than grizzly bears in the recovery zones. We based this expectation upon our knowledge of grizzly bears currently using these areas, along with the potential for bears to expand their range into other similarly roaded habitat outside the CYE and SE as is occurring in roaded habitat outside the NCDE (Mace and Roberts 2011, p.38-39; 2012, p. 24, 25, and 27).

Effects on Grizzly Bear Secure Habitat Under the Revised Plan

General Effects of the Availability of Secure Habitat on Grizzly Bears

Because grizzly bears can conflict with humans and their land uses, grizzly bear populations require a level of safety from direct human-caused mortality and competitive use of habitat such

as settlement, roading, excessive recreation, logging, mining, and livestock grazing. Ideal grizzly bear habitat provides some areas isolated from excessive levels of human impact.

The IGBC Taskforce (IGBC 1994) recognized the importance of secure areas to grizzly bears. The Taskforce defined "core areas" as those areas with no motorized access (during the non-denning period) or heavily used foot/livestock trails, providing some level of secure habitat for grizzly bears. Motorized use, such as snowmobiling or that associated with timber harvest, could occur within core areas during the denning (winter) period. The Taskforce recommended the establishment of core areas in all subunits, the size of core area should depend on ecosystem-specific habitat conditions, and that a core area remain intact on the landscape for at least 10 years. As previously discussed, research suggested core areas in the CYE and SE be at least 55 percent of the land area in a BMU. Based on the findings of Wakkinen and Kasworm (1997, pp. 22-26), this level and distribution of core area is likely to provide levels of secure habitat that provide for breeding, feeding, and sheltering activities for grizzly bears, including females (USFWS 2011b, p. 65).

Effects of the Availability of Secure Habitat on Grizzly Bears in the Action Area

The requirements of the Access Amendment will continue under the Proposed Action through implementation of FW-STD-WL-02. The current and proposed status of core under the Access Amendment is displayed in Table II-10. Under the Access Amendment, all but two BMUs in the action area, one in the CYE (Grouse) and one in the SE (Lakeshore), would meet the research benchmark for core area. Several (8) BMUs would exceed (provide more than) the research benchmark for core. When the access amendment is fully implemented (anticipated by 2019), core area on the SE will increase to 62 percent of the IPNF BMUs in the SE providing core areas and on the CYE will have increased to 58.5 percent of the CYE recovery zone providing core areas (including IPNF and KNF ownerships) (USFWS 2011a, p. A-60 to A-61).

The requirements for core under the Access Amendment are supported by the Revised Plan through Forest-wide, MA, and GA desired conditions for large, remote areas with low disturbance that will contribute to habitat security for grizzly bears: FW-DC-WL-02, 04, 07, FW-DC-WL-05, FW-DC-AR-07; MA3-DC-WL-01, MA1a,b,c,e-DC-WL-01, MA5-DC-WL-01; GA-DC-WL-PR-02, GA-DC-WL-LK-01, GA-DC-WL-LK-02, GA-DC-WL-LK-03, and GA-DC-LW-PO-02. Under the Revised Plan, desired conditions, guidelines and standards that limit roads, reconstruction and motorized use (Table II-12) also decrease the risk of human-bear interactions. These include: MA1a-STD-AR-02 and 04; MA1b-STD-AR-01, 04, and 05; MA1c-STD-AR-01, MA1e-STD-AR-0; MA3-STD-AR-01, MA5-GDL-AR-03.

These elements of the Revised Plan compliment the Access Amendment and decrease the risk of human-bear interactions. Core areas provide an abundant amount of grizzly bear habitat (usually over half of each BMU) that bears can exploit, free from the disturbance associated with roads. Further, because motorized access is prohibited the chance of encounters with people and therefore poaching will be less in these areas compared to those with open roads. Under the Access Amendment, two BMUs in the action area would not meet the research benchmark for core area: Lakeshore in the SE and Grouse in the CYE. The BMUs in the action area that either meet or provide more than the research benchmark for core area are not expected to have adverse

effects on bears. Hence, we anticipate that the effects of core areas (secure habitat) as proposed in the Revised Plan on grizzly bears would be the same as previously analyzed in our Access Amendment Biological Opinion (USFWS 2011a, see pp. A-60 through A-65 and A-71 to A-73).

As described in the Access Amendment Biological Opinion (USFWS 2011a, p. A-69) and clarified in the Errata to the Biological Opinion (USFWS 2012), there is one additional form of potential adverse effect that may occur on grizzly bears associated with core areas on the IPNF. "The proposed Access Amendment allows for a one-time entry into core area on such roads for the sole purpose of hydrologically stabilizing the roads. To minimize the impact of such entry, the proposed Access Amendment requires that such work be completed in one bear season or less and the road is not to be entered for at least 10 years. As noted earlier, the duration of activity is limited and the activity is limited to the road prism. Therefore, we do not expect these activities to cause adverse effects to grizzly bears in most cases, although the potential cannot be ruled out entirely. We expect only female grizzly bears with cubs would be adversely affected, as they tend to be more sensitive to human disturbance. However these adverse effects would be short term only. Further, as stated, not all female grizzly bears affected by the one-time entries would be adversely affected, nor would all adverse effects rise to the level of significant impairment of breeding, feeding or sheltering. To prevent the need for such entries into core areas in the future, the proposed Access Amendment requires that roads that are closed to provide for core grizzly bear habitat be stabilized immediately and before the underlying habitat qualifies as core."

Under the Access Amendment, there are no provisions for core areas in BORZ and the Revised Plan does not change this. Habitat security will primarily be achieved by limiting linear miles of open and total permanent roads to the existing baseline condition (under which bears are using the habitat); the Revised Plan allows no net increase in linear miles of open and total permanent roads. The fact that grizzly bears are using these areas indicates that some bears have apparently habituated to the conditions within them, and seem able to find and obtain the resources necessary for their needs and avoid human encounters resulting in mortality. As stated in our previous analysis (USFWS 2011a, pp. A-72 toA-73), we expect some ongoing adverse effects on grizzly bears attempting to use these areas as a result of the existing roaded conditions and lack of secure habitat. We also expect that some grizzly bears will use these areas despite some level of adverse conditions, including females, albeit at lower densities than grizzly bears in the recovery zones. We base this expectation upon our knowledge of grizzly bears currently using these areas and the large number of grizzly bears expanding their range into other similarly roaded habitat outside the NCDE (Mace and Roberts 2012, pp. 24-28).

Effects of Motorized Over-snow Vehicles on Grizzly Bears Under the Revised Plan

General Effects of Motorized Over-snow Use on Grizzly Bears

In general, effects on grizzly bears from snowmobiles may occur during denning, after den emergence, and in spring habitat (USFWS 2010a, pp. A-26 through A-28). As summarized above under section B. *Status of the Species,* available information regarding the effects of snowmobiles on grizzly bears is generally anecdotal, based on grizzly bear responses to various

stimuli other than snowmobiles collected during research. Such reports typically lack information related to the timing of disturbance, type of den, winter conditions or other important factors necessary to assess the significance of disturbance to grizzly bears, if any. Some information collected on black bears or other *Ursids* may have some relevance, but even the data on these species is incidental and largely theoretical. Regarding effects on bears during denning, snow is an excellent sound barrier (Blix and Lentfer 1992, p. 22) and impacts to denning bears would likely be less in deep snow situations than in shallow snow conditions. It is likely that hibernating bears exposed to meaningless noise, with no negative consequences to the bear, habituate to this type of disturbance (Knight and Gutzweiler 1995).

As discussed above, we believe that disturbance from snowmobiles may be most consequential shortly after den emergence of a female with cubs. Females and their cubs remain in the den site area for several weeks after emergence from dens (Haroldsen et al. 2002, p. 33; Mace and Waller 1997, pp. 37-38). Females with cubs have high energetic needs, and cubs have limited mobility for several weeks after leaving the den. Disturbance levels that cause a female to prematurely leave the den in spring or move from the den area could impair the fitness of the female and safety of the cubs. If cubs attempt to follow their mother, they will likely experience decreased fitness and the family group may be pushed to less suitable habitat.

After den emergence in spring, grizzly bears seek sites that melt snow early and produce green vegetation (Kasworm et al. 2010, p. 65). There is limited potential for snowmobiles to occur in these areas and overlap spring grizzly bear habitat for a short period of time after den emergence. The portion of the population using these habitats in early spring is most likely to be males and lone females (W. Kasworm 02/03/2013 pers. comm.). These bears are mobile and can move from disturbance (ibid).

To summarize, we have found no primary-source reports in the literature of grizzly bear den abandonment directly attributed to snowmobile activity (Hegg 2010 pp. 26-27; Servheen 2010 pers. comm. as cited *In* USFWS 2011b, p. 34) nor has other substantive adverse effects on bears from snowmobile use been substantiated (Mace and Waller 1997, p.41; USFS 2006, pp.3-263 3-373).

Effects of Motorized Over-snow Use on Grizzly Bears in the Action Area

Currently, over-snow motorized use is allowed on 83 percent of the SE recovery zone. Under the Revised Plan, this would be reduced to 79 percent. There are 14 miles of groomed routes located in approximately 118,200 acres of available modeled grizzly bear denning[5] habitat within the SE portion of the Action Area. Off-route use occurs on approximately 7,440 acres of the IPNF portion of the SE recovery zone; both on and off-route snowmobile travel combined occurs on about six percent of modeled denning habitat on the IPNF portion of the SE.

[5] Grizzly bear denning habitat was modeled separately for the two ecosystems using local research data

Snowmobiling also occurs on approximately 95 miles of groomed trails in the Priest and Pack River BORZ.

In the IPNF portion of the CYE, over-snow motorized use is allowed on 99 percent of the recovery zone in the action area and this would be reduced to 87 percent under the Revised Plan. Additionally, there are 26 miles of groomed trails within 74,750 acres of modeled grizzly bear denning habitat within the CYE portion of the IPNF. Off-route use occurs on approximately 14,250 acres of the IPNF portion of CYE recovery zone; both on and off-route snowmobile travel combined occurs on about six and 19[6] percent of modeled denning habitat on the IPNF portion of the CYE. Including over-snow motorized use in the KNF portion of the CYE recovery zone, approximately 9 percent of the denning habitat in the entire CYE recovery zone currently overlaps with motorized over-snow use. There are no groomed trails within the Mission-Moyie BORZ.

The actual magnitude and location of this use in both recovery zones during the post-emergence period (i.e. after April 1) is reduced from the acres presented due to a combination of limited public participation (decreasing interest by snowmobilers as spring emerges and trail grooming is ceased) and snow conditions (decreasing snowpacks and increasing avalanche danger in April and lack of snow or the lack of drivable access with wheeled vehicles to areas containing sufficient snow due to soft roadbed conditions in May).

Table II-12 summarizes the existing over-the-snow motorized access within BMUs and denning habitat on the IPNF.

The Revised Plan MA direction would result in a decrease in the acres of grizzly bear habitat where over-the-snow motorized access would be allowed by 17,111 acres in the SE and 29,982 acres in the CYE on the IPNF (Tables II-13 and II-14). Additional elements of the Revised Plan that may reduce the acres of over-snow motorized use and may further reduce the amount of over-snow motorized use include desired conditions that state that dens for threatened and endangered species are relatively free of human disturbance when they are in use (FW-DC-WL-01); that all BMUs have low levels of disturbance to facilitate bear use such as denning, etc. (FW-DC-WL-04); guideline (FW-GDL-WL-01), which restricts management activities during spring emergence (4/1-5/1) where predicted denning habitat occurs; and standard (FW-STD-WL-04), which states that no grooming of snowmobile routes in grizzly core habitat would occur in the spring after April 1 of each year. All elements of the Revised Plan would be considered in the development of future winter travel plans.

We acknowledge that some denning habitat in both the SE and CYE on the IPNF occurs in grizzly bear core areas. There is no winter season ending date for motorized use on the IPNF. Therefore, snowmobile use of roads, trails, and open areas is allowed as long as the snow persists. Snow conditions within the action area are often suitable for snowmobiling to continue

[6] Over-the-snow motorized use occurs on approximately nine percent of the entire Cabinet-Yaak recovery zone (USFS 2013a, p,76).

beyond April 1, the beginning of the grizzly bear non-denning period. Therefore, some level of motorized use (snowmobile only) will likely occur within core habitat and on restricted roads during the non-denning period, compromising the effectiveness of core areas and OMRD for a short period of time.

Effects on Denning Habitat. The potential for disturbance to denning grizzly bears on the IPNF does exist but is probably low due to the low probability of a direct encounter of a snowmobile to a den and even in that unlikely case, the excellent insulative properties of snow to mitigate noise. As stated previously, off-route snowmobile use occurs on 19 percent (14,250 acres) of denning habitat in the IPNF portion of the CYE and 6 percent (7,440 acres) in the SE. Currently, there are 14 miles of groomed routes and 11 miles of ungroomed routes in modeled grizzly bear denning[7] habitat within the SE and 26 miles of groomed trails and 26 miles of ungroomed routes in six CYE BMUs within the Action Area. As such, typical high-use snowmobile areas and potential den sites have a limited likelihood of overlap. This is because grizzly bears generally den in either timbered habitat or very steep slopes, including the slopes of open basins (USFWS 2010, p. 26). Most of the heavy snowmobile use occurs on trails, roads, or open basins, and meadows – although some snowmobile riders use steep open basins for "high marking", in which case there is potential for direct overlap between denning habitat and steep open slopes favored for "high marking" by snowmobiles (ibid). However, most denning habitat - except for "high-marking" areas - is less favorable for snowmobile use and as such there is a reduced chance of adverse overlap between grizzly bear den sites and snowmobile traffic (ibid).

Therefore, there is a low likelihood that some grizzly bears in the CYE and SE may be affected during the denning season, but the Service believes that the magnitude of impacts during this time in both the recovery zone and BORZ would be insignificant and unlikely to adversely affect grizzly bears.

Effects on Emerging Females with Cubs of the Year. Disturbance from snowmobiles may adversely affect grizzly bears shortly before or after den emergence of a female with cubs. Females and their cubs remain in the den site area for several weeks after emergence from dens (Mace and Waller 1997, p. 37). Females with cubs have high energetic needs, and cubs have limited mobility for several weeks after leaving the den. Disturbance levels that cause a female to prematurely leave the den in spring or move from the den area could impair the fitness of the female and safety of the cubs. If cubs attempt to follow their mother, they will likely experience decreased fitness and the family group may be pushed to less suitable habitat. To date, litter abandonment by grizzlies due to snowmobiling activity has not been documented in the lower 48 States (Hegg 2010, p. 26-27; C. Servheen 2010 pers. comm. as cited *In* USFWS 2011b) nor has other measurable or detectible adverse effects on grizzly bears from snowmobile use been substantiated (Mace and Waller 1997, p. 41; USFS 2006, pp.3-263 3-373). Based on a sample size of 10 bears, radio-collared female bears with cubs in the CYE emerged between the third

[7] Grizzly bear denning habitat was modeled separately for the two ecosystems using local data (USDA Forest Service 2011 project file data).

week of April and third week of May (W. Kasworm 02/21/2013 pers. comm.). In the SE, den emergence dates have not been identified (W. Wakkinen 07/01/2013 pers. comm.), but are likely similar to those in the CYE given the similarity in weather patterns between the two recovery zones (Wakkinen and Kaworm 2004, p. 61). The active bear year in the SE is described as beginning on April 1. The IPNF states that snowmobile use after April 1 is greatly reduced due to a combination of limited public participation at that time of year and deteriorating snow conditions.

Under the Revised Plan, less temporal and spatial overlap of grizzly bears and snowmobiles would occur on the IPNF due to the decrease in acres where over-snow motorized use is allowed (Table II-12). These changes would not be realized until winter travel plans are completed. Until such time, several mitigating factors are in place: 1) a winter closure remains in effect in the SE; 2) restrictions on grooming of snowmobile routes after April 1 (which is expected to deter most access and use by all but the most hard-core snowmobilers); 3) guideline (FW- GDL-WL-01) which restricts management activities in predicted denning habitat between April 1 and May 1 which includes any activity that is carried out or authorized by the Forest that would result in impacts on natural resources or change human use of the Forest; and 4) standard (FW-STD-WL-04) which states that no grooming of snowmobile routes in grizzly core habitat will occur in the spring after April 1 of each year. These mitigating factors would reduce the likelihood of overlap of snowmobilers and females with cubs during den emergence (thereby improving the baseline condition).

Nevertheless, winter motorized use could occur in a small proportion of denning habitat during the den emergence period under the Revised Plan, resulting in disturbance of females with cubs that could impair the fitness and safety of the female and cubs. The Service believes that the likelihood of impact from snowmobiles on emerging females with cubs is low. This is because:

- There is a low estimated number of grizzly bears in the U.S. portion of the CYE (42) and SE (25 to 30);
- the low proportion of female grizzly bears with cubs of the year (averaging 2.5 unduplicated observations from 2006 to 2011 in the CYE [Kasworm et al. 2012, p. 14]) (averaging 0.5 females with cubs in the SE [USFWS 2011a, p. A-15);
- the overlap of just 19 percent of modeled denning habitat in the CYE (9 percent for the entire CYE including both IPNF and KNF) and 6 percent for the SE where snowmobile use currently occurs
- the seasonally-declining numbers of snowmobilers by April of each year (USFS 2013a, p. 84; USFWS 2011a, p.A-44);
- restrictions on grooming snowmobile routes after April 1 (which may affect the ability of off-route users to access areas at higher elevations) (FW-STD-WL-04).
- the limited ability to access higher elevations with snowmobiles since road closures are in effect after April 1; snowpack is breaking up at lower elevations; and trails are no longer groomed.

- the late den exit dates for females with cubs in the CYE (beginning the third week of April [W. Kasworm 02/21/2013 pers. comm.] at which time snowmobiles are less likely to be able to access the area due to poor snow conditions at lower elevations)

Additionally, GA-DC-WL-LK-03, GA-DC-WL-PO-02 GA-DC-WL-PR-02 in the Lower Kootenai, Pend Oreille, and Priest geographic areas will reduce the probability that disturbance could occur during spring emergence due to snowmobile use. These elements specifically identify areas where the desired condition is for low levels of human disturbance during grizzly bear spring emergence (April 1 – May 1) and would be considered in the development of site-specific winter travel plans.

However, we cannot entirely dismiss that a disturbance would occur or that it would not result in adverse effects on a female with cubs. However, we believe an individual female would not likely be affected for more than one denning season. Grizzly bears typically do not reuse den sites. Thus, if a female grizzly bear suffers significant disturbance at or near her den site, it is probable that she would locate a new site to den in the future and would have options for denning elsewhere.

A component of the recovery of the CYE and SE may in the future include occupation of BORZ, including denning. To date, there are no records of female bears denning in BORZ. We also expect that this realization will take time to occur (see Section A.5). Therefore, we do not anticipate adverse effects on females with cubs in BORZ under the Revised Plan.

Effects on Spring Habitat. After den emergence in spring, grizzly bears seek sites that melt snow early and produce green vegetation (Kasworm et al. 2010, p. 65). These sites can often overlap with ungulate winter range and provide winterkill carrion. Spring habitat use in the CYE (April and May) indicated use of low elevation sites (ibid). The portion of the population using these habitats in early spring is most likely to be males and lone females (W. Kasworm 01/28/2013 pers. comm.). These bears are mobile and can move from disturbance (ibid). Females with cubs are more vulnerable, but are likely to remain at the higher elevation denning habitat in the early spring (effects described above). The potential for disturbance or displacement of grizzly bears from spring feeding habitat in the action area (CYE and SE) is influenced by the variability in snowpack and the rate of spring melt. It is likely that **s**ome level of motorized (snowmobile only) use occurs during the spring period within core habitat and on restricted roads during the non-denning period, which will likely compromise security of core habitat and OMRD for a short period of time. However, these areas remain designated as core habitat and continue to provide secure core habitat during the remainder of the non-denning period. The risk of such a compromise within spring habitat is likely lessened due to the fact that if the area is accessible to snowmobiles then it is not likely providing spring habitat for grizzly bears at the same time (as described above).

The Revised Plan will reduce the total acres available to over-snow motorized use, and prohibit grooming of snowmobile trails after April 1. For these reasons and based on the discussion above, the Service expects impacts to spring habitat and foraging grizzly bears is low in both the recovery zone and BORZ and the magnitude of impacts during this time would be insignificant and unlikely to result in adverse effects.

Effects of Habitat Management on Grizzly Bears Under the Revised Plan

This section describes the general effects and effects specific to the action area on grizzly bears from vegetation management, fire management, and linkage.

General Effects of Vegetation Management on Grizzly Bears

Vegetation management activities include timber harvest, salvage, planting, thinning, prescribed burns, and mechanical fuel treatment. Vegetation management may impact grizzly bears by affecting food resource availability, proximity to escape cover, human access and conflicts, or temporarily shifting grizzly bears into less secure areas.

A study by Zager (1980, p. 35) in the Flathead National Forest in northwestern Montana found 81.8 percent of collared grizzly bears used harvested stands in proportion to their availability in the home range. The use of harvested stands increased in the summer, when huckleberry productivity was high and decreased in the fall, as bears moved to higher elevations or unharvested areas, likely related to the opening of hunting season (ibid, p. 36). Harvested stands produced the most food resources for grizzly bears approximately 8-15 years after harvest (Zager 1980, Martin 1983). Similarly, Lindzey and Meslow (1977) documented abundant food resources for black bears in harvest units 15 years after harvest.

Another factor to consider with regards to vegetation management is the availability and proximity of escape cover (Zager and Jonkel 1983, p. 131). A decrease in the amount of escape cover may result in different effects on grizzly bears and their habitat. If cover is limiting in the project area, either by the amount or distribution, timber harvest would likely result in negative impacts (Zager 1980, pp.75-76). However, if cover is not limiting in a project area, timber harvest may have either no effect or a positive effect in those situations where food abundance or distribution is improved. By removing or reducing overstory vegetation through harvesting, slashing and/or burning, grizzly bear food production may be increased during summer (Mace and Waller 1997, p. 120; Waller 1992, p. 36). This includes food resources such as berries and succulent forbs.

Harvest unit size and shape may have an indirect effect on grizzly bear use in that they determine the proximity of escape cover (Zager et al. 1983, p.131). Zager, in northwestern Montana, found that nearly half of the harvest units used by grizzly bears were less than 40 hectares; however grizzly bear sign was also documented in units larger than 160 hectares (ibid, p. 131). In Yellowstone, Mealey et al. (1977) documented spring grizzly bear use in harvested stands less than 20 hectares that included leave trees and did not document use in larger units without leave trees, presumably due to the lack of cover.

If food production or distribution is improved with timber harvest but human activity is not controlled after the completion of harvest activities, negative impacts on grizzly bears may occur due to an increase in the potential for conflicts between humans and grizzly bears. Adequate motorized access management can support the exploitation of rejuvenated food resources in older harvested units by grizzly bears. Reduced cover may increase the visibility of grizzly bears, which could increase their vulnerability to illegal human-caused mortality. Harvested stands that are easy to access may receive an influx of berry pickers during the berry season

which may limit grizzly bear use or increase human-caused mortality (Zager 1980). Waller (1992, p. 37) found that of the harvested stands that he studied in the Swan Mountains of Northwestern Montana, those with the highest grizzly bear use had limited access due to closed gates and/or over-grown roads. Grizzly bears within his study area that used harvested stands were found at higher elevations and spent little time in lower elevation harvested stands where harvest was most common (ibid, p. 37). Waller attributed this to human use of those lower, more accessible harvested stands. Waller also found that grizzly bears avoided stands where the vegetation had not recovered enough to provide security cover and preferred to use stands that were 30 to 40 years post-harvest (ibid, p. 39).

Most timber harvest activities that will occur during the grizzly bear denning season are not likely to impact grizzly bears. Snow is an excellent sound barrier and impacts to denning bears will likely be less in deep snow situations than in shallow snow conditions. However, the type, depth, and moisture content of the snow can determine how sound is transmitted through snow (Blix and Lentfer 1992, p. 22). It is likely that hibernating bears exposed to meaningless noise, with no negative consequences to the bear, habituate to this type of disturbance (Knight and Gutzweiler 1995, p. 133).

Fuels reduction is not expected to adversely affect grizzly bears. These projects remove cover for the purpose of fire prevention near residential development. These stands may be treated again to retain them as fuel breaks, and not allowed to regenerate. Given the proximity to residential developments, many fuel reduction projects occur in or very near areas where management should discourage use by grizzly bears and focus on preventing conflicts between people and grizzly bears (e.g. MS-3 habitat).

Often, temporary roads are constructed in order to access harvest units. Temporary roads built for timber harvest may remain on the landscape for several years and receive a substantive amount of use. Such roads may also cause adverse effects to grizzly bears, such as displacement from key habitats. The impacts of temporary roads were considered in our analysis of effects related to the Access Amendment.

Helicopters may also be used in vegetation management projects. Helicopter use has advantages for grizzly bears in that it can often reduce the need for road use and road construction. Thus there are no lingering effects of roads on the landscape. Helicopter use in occupied grizzly bear habitat may elicit a response in grizzly bears, but the response is variable depending on several variables. Effects may range from a simple awareness of the helicopter, short-term disturbance or flight response or displacement from an area. In timbered habitats, McLellan and Shackleton (1989, p. 378) found that an overt avoidance or displacement response required high intensity helicopter activity, such as carrying equipment within 200 meters of a grizzly bear. If helicopter use is short in duration and low in frequency, it is not likely to result in significant impacts on grizzly bears (USFWS and USFS 2009, p. 4). Extended use with multiple passes could interfere with the normal behavior patterns of grizzly bears. The effects to grizzly bears of repeated, low altitude flight paths that follow open roads may partially offset the existing under-use of habitat in the immediate vicinity of the roads due to the “avoidance” by the grizzly bears of habitat in close proximity to open roads. In many cases, the effects of helicopter logging that occurs in

roaded habitat will have insignificant effects to grizzly bears as long as all roaded areas and roadless habitat provide adequate secure habitat for grizzly bears. However, helicopter logging in areas that are not highly roaded could result in adverse effects similar to adverse effects caused by roads.

Effects of Vegetation Management in the Action Area

Timber Harvest – Table II-13 illustrates the degree of allowable use activities under current management direction versus the Proposed Action. The Revised Forest Plan will decrease the acres identified as suitable for timber production (timber stands with planned, scheduled entries for the purpose of generating commercial timber products) in the recovery zones from 232,261 acres to 0 acres in the SE and 142,349 acres to 0 acres in the CYE. Timber harvest (timber cutting for wood fiber utilization and other multiple-use purposes, including resource benefits and fuels management) in the recovery zones will also decrease under the Revised Plan. The Proposed Action reduces the area where timber harvest activities may occur within the SE by 5,900 acres and in the CYE by 2,394 acres (Table II-14).

As described above, timber harvest has varying effects on foraging opportunities for grizzly bears. The primary effect of timber harvest on grizzly bears is the disturbance resulting from people and equipment operating in grizzly bear habitat as well as the effects of roads used to access the timber stand. The effects of roads are addressed above. Timber harvest may result in temporary disturbance of bears during the time period the harvest takes place. During this time period bears would move away from the disturbance to access necessary resources. Since some commercial harvest occurs in winter, some effects on grizzly bears from displacement would be reduced in those cases. Additionally, the Access Amendment also indirectly limits the amount of grizzly bear habitat in BMUs (and subunits) affected by vegetation management activities during the active bear year that generate noise and other disturbance (e.g. timber harvest and recreation) by limiting the road access needed for these activities. Given the healthy condition of core areas and adequate open and total route density management under the Revised Plan, we do not anticipate that this disturbance would result in adverse effects on grizzly bears that cause impairment of the ability to feed, breed, or shelter. Presently, approximately 56 to 57 percent of the CYE recovery zone serves as core areas and this would increase to approximately 59 percent under the Access Amendment (USFWS 2011a, p. A-39, A-60). Approximately 60.6 of the IPNF portion of the SE recovery zone serves as core area and this would increase to approximately 61.4 percent under the Access Amendment (USFWS 2011a, p. A-61)

Based on our history of consultation on vegetation management projects, information in our files, and the exclusion of core areas from timber production (i.e., commercial timber harvest with planned regular entries) we do not anticipate that vegetation management activities (not including associated roads) by themselves would result in effects to grizzly bears that would significantly impair breeding, feeding, or sheltering. Large core areas in each BMU and other land allocations (MA1-wilderness- no timber harvest and MA5-backcountry-limited timber harvest) with limited human disturbance would still be available for grizzly bears to meet their resource needs. Similarly, due to the availability of wilderness and core areas, nor do we anticipate significant impairment of grizzly bears' ability to feed, breed, or shelter as a result of

incidental harvest outside the suitable timber base for other resource objectives such as fuels management or habitat restoration (allowed in MA2 (except wild river segments), MA3, MA5, MA6, and MA7).

In BORZ, grizzly bears would have fewer options providing undisturbed areas to select from if disturbed by timber harvest. However, we do not anticipate significant impairment of grizzly bears' ability to feed, breed, or shelter as a result of timber production or timber harvest for resource benefit. This is attributed to the occupation of these areas by grizzly bears despite the sub-optimal conditions (including existing, ongoing levels of timber harvest), the elements of the Access Amendment that limit open, total, and temporary roads, and the Access Amendment requirement in BORZ to schedule timber harvest activities that will occur within multiple watersheds in a manner to minimize disturbance of grizzly bears resulting from road use during project level consultation.

Fuels management projects in the WUI that remove vegetative layers in order to reduce fire risk may or may not affect bears. Grizzly bears may forage in the WUI where there is sufficient cover and security or distance from human developments. Projects in the WUI that remove various forest canopy layers may reduce or increase foraging opportunities for bears depending on site-specific conditions. However, because the WUI occurs in proximity to communities and other human developments, we are less concerned about providing habitat for grizzly bears in these areas. Reduced foraging opportunities and hiding cover for grizzly bears in the WUI may help reduce the risk of grizzly bears becoming attracted to anthropogenic food sources on adjacent private lands and/or reduce the risk of grizzly bears encountering people, leading to grizzly bear mortality.

Opening Size / Proximity of Cover – This section addresses the effects of the desired vegetative conditions on the IPNF as it relates to opening size. The Revised Plan desired condition is for a greater range in patch sizes (openings). Of concern to the Service is that opening sizes on the IPNF under the Revised Plan could be increased (Table 1, Appendix A USFS 2013a) from those typically occurring as a result of vegetation management (including prescribed fires) under the Existing Plan. Larger opening size would potentially create more grizzly bear foraging habitat but at the same time these larger openings may be underused by grizzly bears due to lack of cover. Larger opening sizes may also increase the visibility of grizzly bears, which may potentially increase their vulnerability to human-caused mortality and/or contribute to displacement from preferred habitats. Lastly, larger openings may contribute to an overall reduction in cover within grizzly bear habitat on the Forest.

The IPNF states that desired conditions for larger openings are based on natural disturbance processes, which are the conditions grizzly bears evolved with in this area, and that security for grizzly bears is maintained or improved by implementing the Access Amendment (FW-STD-WL-02) and through public information and education programs that reduce the risk of human/bear conflicts. The KIPZ Planning Team also states that often in a timber harvest design leave patches, thickets, riparian corridors, and/or other areas of unique habitat features are retained in the harvest unit, dependent upon site conditions and that these features may interrupt line of sight; reduce visibility; and provide cover for bears (J. Anderson 03/12/2012 pers.

comm.). Cover is abundant in grizzly bear habitat in the KIPZ planning area (J. Anderson 07/15/2013 pers. comm.). For example, where LAUs overlap the grizzly bear recovery zones there would be an influence from the NRLMD on "cover" for grizzly bears due to the limits on treatments in multi-story foraging and stand initiation stage snowshoe hare habitat. Generally, if a stand has a high stem density and horizontal cover to provide snowshoe hare habitat, it likely is capable of providing cover for grizzly bears. Further, timber harvest activities are expected to be small when measured against the total size of the Forest; acres of regeneration harvest are anticipated to total approximately 16,830 acres over the first decade on the IPNF (this amounts to 0.6 percent of the entire IPNF). Including the acres of intermediate harvest (27,850 acres total in the first decade on the IPNF) increases the total timber harvest to 44,680 acres on the IPNF, which is 1.8 percent of the entire IPNF. Also grizzly bear core areas are not included in the suitable timber base and are not part of the 1.8 percent that is anticipated to have regeneration or intermediate harvest over the first decade. Hence, opening sizes from timber harvest are not expected to contribute to measureable reductions in cover under the Revised Plan.

Of primary concern to the Service is effect of large openings adjacent to open roads or seasonally-managed roads allowing public access into recently harvested areas. In these situations, foraging opportunities may be avoided or under-used due to the presence of human use (Waller 1992, p.37). This condition may persist for some period of time post-harvest (Waller 1992, p.39) based on site conditions and stand cover types. Additionally, grizzly bears that select these areas may be at higher risk of human detection, conflict, and resulting grizzly bear mortality. These types of effects would be site-specific depending on site conditions. The Forest states that larger openings are more likely to result from natural disturbances than from planned vegetation management activities. Additionally, the effects from larger openings may be reduced, depending on site conditions, by measures included during site-specific project development such as:

- Retention of riparian corridors (FW-DC-RIP-04; FW-STD-RIP-04).
- Retention of untreated patches that provide for structural diversity and these may provide vegetative screening or cover in openings
- Closure of roads for public use during and immediately after vegetation management activities.
- Ensuring adequate closure devises (i.e., gates, barriers, full or partial recontouring/ripping of road) are in place and functioning properly.

The IPNF states that large openings are more likely to result from natural disturbances rather than project activities. Still, vegetation management projects proposing large opening sizes that would have adverse effects on bears may be proposed under the Revised Plan. Security for bears in these situations may be included in the site-specific project design and would be provided by the Access Amendment (FW-STD-WL-02) and through public information and education programs that reduce the risk of human/bear conflicts. Therefore, adverse effects resulting in impairment of breeding, feeding, and sheltering would be infrequent and we do not expect substantial negative effects on the population. Any such proposals would be subject to project-specific consultation regarding effects to grizzly bears so long as the grizzly bear remain listed.

In BORZ, there are fewer limitations on timber harvest and more human presence. Also, MS1 designation does not apply. However, there are also fewer bears in BORZ, and security for bears in these situations would be provided by the Access Amendment (FW-STD-WL-02) and through public information and education programs that reduce the risk of human/bear conflicts. Therefore, adverse effects resulting in impairment of breeding, feeding, and sheltering would be infrequent and we do not expect substantial negative effects on the population. Future site-specific consultations may also apply.

Helicopter Harvest - The Revised Plan allows the use of helicopters for vegetation management projects. All helicopter operations on the IPNF are designed using the *Guide to Effects Analysis of Helicopter Use in Grizzly Bear Habitat* developed by the Montana/Northern Idaho Level 1 Terrestrial Biologists Team (USFWS and USFS 2009) in order to avoid, limit, or minimize the potential for adverse effects (S. Dekome 08/13/2013 pers. comm.). The effects of helicopter use on grizzly bears are highly site-specific and variable. Nevertheless, projects using helicopter harvest with adverse effects on bears may be proposed under the Revised Plan. Based on our history of consultation on vegetation management projects with the IPNF, helicopter harvest is infrequent. In general, helicopter harvest accounts for less than 10 percent of timber harvest on the IPNF (S. Dekome 08/13/2013 pers. comm.). Additionally, the Revised Plan implements the IGBC guidelines for MS 1 (see Section A.2), which encompasses the entire CYE and SE recovery zones. Under MS1 designation the needs of grizzly bears are favored when grizzly habitat and other land use values compete. Revised Plan desired conditions would also moderate effects of helicopter harvest in grizzly bear habitat (FW-DC-WL-01, 03, 04); and effects of helicopter harvest are mostly temporary - ending after the harvest is complete (versus using permanent roads which remain on the landscape). Therefore, adverse effects resulting in impairment of breeding, feeding, and sheltering would be infrequent and we do not expect substantial negative effects on the population. Project-specific consultation will apply in the future, when appropriate.

Prescribed Fire – The effects of prescribed fire on bears would be similar to that of timber harvest. Prescribed fires may result in disturbance and displacement impacts to grizzly bears through presence of humans, temporary camps, and use of motorized equipment for fire containment. During this time period bears would move away from the disturbance to access necessary resources. Given the healthy condition of core areas and adequate open and total route density management under the Revised Plan, we do not anticipate that this disturbance would result in adverse effects on grizzly bears that cause impairment of the ability to feed, breed, or shelter. Presence of humans implementing prescribed fires are not expected to contribute to conflicts given the likelihood that bears would be displaced from the area; a food storage order is in place on all IPNF lands north of the Clark Fork River, Lake Pend Oreille, and Pend Oreille River (encompassing the CYE, SE, and BORZ), and there is no history of conflicts from such activities on the Forest.

Prescribed fires would reinvigorate and increase the amount or quality of grizzly bear forage species such as grasses and berry-producing shrubs. We expect the only potential adverse effect on grizzly bears from prescribed fire would be those creating large opening size. The effects would be the same as those described above. Since 1987, 600 acres in 3 BMUs have been

treated with prescribed fire, mostly associated with post-harvest treatments (USFS 2013a, p.77). This is substantially less than 1 percent of the total acreage available in the BMUs.

The Revised Plan implements the IGBC guidelines for MS 1 (see Section A.2), which encompasses the entire CYE and SE recovery zone. Under MS1 designation the needs of grizzly bears are favored when grizzly habitat and other land use values compete. Security for bears in these situations would be provided by the Access Amendment (FW-STD-WL-02) and through public information and education programs that reduce the risk of human/bear conflicts. Also, a very small proportion of available BMU acres are treated with prescribed fire. Therefore, adverse effects resulting in impairment of breeding, feeding, and sheltering would be infrequent and we do not expect substantial negative effects on the population. Project-specific consultation will apply, when appropriate.

In BORZ, grizzly bears would have fewer options providing undisturbed areas to select from if disturbed by prescribed fire activities. However, we do not anticipate significant impairment of grizzly bears' ability to feed, breed, or shelter. This is attributed to the relatively few acres of BORZ treated with prescribed fire (just 3,573 acres or less than 1 percent of the available acres in the SE and CYE BORZ since 1987), the occupation of these areas by grizzly bears despite the sub-optimal conditions (including existing, ongoing levels of timber harvest), the elements of the Access Amendment that limit open, total, and temporary roads, and the Access Amendment requirement in BORZ to schedule timber harvest activities that will occur within multiple watersheds in a manner to minimize disturbance of grizzly bears resulting from road use during project level consultation (prescribed fire is often implemented as a post-harvest activity [USFS 2013a, p.77]).

Effects of Fire Management on Grizzly Bears Under the Revised Plan

Fire management is the process of deciding which fires to allow to burn and which to suppress along with the physical activities of suppressing wildland fires.

General Effects of Fire Management on Grizzly Bears

Fire maintains the mosaic of openings and varying vegetative successional stages on the landscape that provide the diversity of foods required by bears. Natural fire often stimulates the understory and/or increases the vegetative diversity in high quality grizzly bear habitat, benefitting grizzly bears in the long-term. Fire suppression alters the natural development of forests and species composition and can render forests susceptible to large-scale disturbance due to increased fuels and denser stands. Higher intensity stand-replacing fires may also occur requiring longer to recovery or requiring active management to restore.

Fire management may result in disturbance and displacement impacts to grizzly bears through presence of humans and use of motorized equipment for fire suppression. Generally, grizzly bears would leave an area on their own, in advance of an approaching fire, and therefore, be out of the area associated with fire suppression activities. However, if suppression activities were to take place prior to an approaching fire, a grizzly bear may be affected before leaving the area. There may be some effects from disturbance caused by the overall increase in human activity in

a particular area. These activities may include increased vehicular traffic, aerial support, and fire camps, any of which may cause disturbance or displacement of a grizzly bear prior to or when they are moving from the area. Similarly, there may be a concentration of human activities associated with fire suppression or fire clean-up, assessment, and restoration activities that result in disturbance and open roads that displace bears, or increase the risk of human food and attractants luring grizzly bears into the area.

Indirect, long-term effects from fire suppression activities may result from opening previously closed roads, constructing new roads or temporary roads, constructing firebreaks or constructing machine lines. These actions may contribute to the open and total road densities which are limited in certain areas to protect grizzly bears or result in effects to grizzly bears similar to effect of roads on grizzly bears. The adverse impacts of roads on grizzly bears are described above (see *Effects of Roads* section above).

Wildland fires for resource benefit are typically allowed to burn with some degree of certainty that the fire would go out naturally or could be contained within predefined lines. Wildfires, when allowed to burn, can result in short-term negative effects and/or long-term beneficial effects depending on the vegetation species and fire severity. Some foraging habitat and/or cover may be lost in the short-term. However, natural fire often stimulates the understory and/or increases the vegetative diversity in high quality grizzly bear habitat, benefitting grizzly bears in the long-term as long as these areas are not also subject to human access or pressure from collection forest products (huckleberries and mushrooms).

Effects of Fire Management on Grizzly Bears in the Action Area

To reiterate, the effects of wildland fire on bears include short-term displacement, loss of forage, and alteration of habitat use patterns. In the long-term, bears are expected to benefit from fires from stimulated understory growth and increased vegetative diversity. The Revised Plan includes an emphasis on the use of fire to trend vegetation towards the desired condition (FW-DC-FIRE-03; MA1abc-DC-VEG-01, MA1abc-DC-FIRE-01, MA1abc-GDL-FIRE-01, MA2-DC-FIRE-01, MA5-DC-VEG-01, MA5-DC-FIRE-01, and MA5-GDL-FIRE-01). The IPNF states that the use of fire to trend towards the desired conditions for vegetation and restoring habitats would provide the approximate types and amounts of habitats that grizzly bears would have evolved with on the IPNF (USFS 2013a, p.106). Early successional grasses and forbs would provide forage for grizzly bears, and the following successional stages in habitat types preferred by bears would also provide food and cover. Thus, the effects on grizzly bears of allowing unplanned ignitions to burn may result in temporary displacement of grizzly bears, a temporary reduction in foods and cover within the burned perimeter. Grizzly bears evolved with wildfire and so while the displacement effects may be adverse to individuals in specific instances, these negative effects would be offset beginning soon after the burn in many locations as regrowth of vegetation begins.

Under the Revised Plan, undesirable wildfires will continue to be suppressed where necessary to protect life, property, and key resources (FW-DC-FIRE-03). Fire suppression activities introduce a concentration of human activity into the affected area. Even when a decision is made to allow a fire to burn, it is typically controlled within a predetermined boundary. The effects of fires

suppression and fire containment activities on grizzly bears include increased vehicular traffic, aerial support, and fire camps, any of which may cause disturbance or displacement of a grizzly bear prior. However, we do not anticipate adverse displacement effects on bears from these types of fire suppression activities. This is because bears would leave an area on their own, in advance of an approaching fire, and therefore be out of the area associated with fire suppression activities. There may also be human activities associated with fire clean-up, assessment, and restoration activities that result in open roads that displace bears or increase the risk of human food and attractants luring grizzly bears into the area. All fire suppression activities would comply with the Food Storage and Sanitation Special Order. Still other activities associated with wildfire suppression (such as fire breaks, temporary roads, changes in open or total road densities) are variable and may result in adverse effects on grizzly bears. These types of actions are planned and conducted under emergency situations and so the effects to grizzly bears would be analyzed in emergency consultation during and after the activities are complete (50 CFR 402.05).

Effects of Habitat Management on Linkage for Grizzly Bear Under the Revised Plan

The following description of habitat linkage is largely excerpted from Servheen et al. (2003).

General Effects of Habitat Management on Linkage for Grizzly Bears

Linkage zones are areas of habitat connectivity within or between populations of animals that foster the genetic and demographic health of the species. Often, these are specific locations on the landscape where conditions foster movement. Connectivity refers to the arrangement of habitat that allows animals to move across the landscape; patches of similar habitats are either close together or linked by corridors of vegetation. Linkage zones may be connected on the greater landscape only to be fragmented by major highways, railroads, high road densities, and human developments (i.e., fracture zones).

Habitat linkage and connectivity are important components of grizzly bear habitat (Servheen et al. 2001, 2003; USFWS 1993). The main factors generally considered to affect the quality of linkage zones are major highways, railroads, road density, human site development, availability of hiding cover, and the presence of riparian areas (USFS 2005). Factors affecting connectivity of habitat include vegetative cover, adjacency of habitat, and habitat security. Actions that fragment habitat, either temporarily (timber harvest) or permanently (developments), or alter species composition or stand characteristics, or decrease habitat security (access) also compromise habitat connectivity and linkage zones.

For the discussion of linkage zones, we note that these areas must be maintained through consideration of three areas: 1) the highways, railroads, and developments that create the fracture zones; 2) the private lands in the valley bottoms; and 3) the public lands that serve as approach areas on the side-slopes of the valleys (Servheen et al. 2003).

Linkage areas for grizzly bears between recovery zones and Canada are critical to the long-term survival and recovery of bears, particularly in the CYE and SE since it influences population size and genetic health of populations in the U.S. portion of the recovery zones (Servheen 2006, Proctor et al. 2004). According to Proctor et al. (2012) north-south movements within mountain

ranges are more common than east-west movements across mountain valleys. Our knowledge of grizzly bear movements between the recovery areas and Canada is detailed in Section B. 7.

Effects of Habitat Management on Linkage for Grizzly Bears in the Action Area

The main areas of concern associated with the CYE and SE for establishing long-term linkage for movement of bears between Canada and U.S. recovery zones as identified in Servheen et al. (2003) are as follows: 1) CYE 1) CYE – SR-2 and SR-56 and the railway lines that parallel SR-2; 2) SRE – B.C. Highway 3 (in Canada); 3) Between the SRE and CYE – SR-95 and the parallel railway; 4) Between the CYE and the Bitterroot Mountains – SR-200 and the parallel railway; and 5) Between the CYE and the NCDE – SR-2 and SR-93. Of these, SR-95 and portions of SR-2 are located within the action area of the Proposed Action.

Servheen et al. 2003, (p. 13) identified SR 95 and Highway 1 as completely separating the two recovery zones. Also, significant amounts of public and private development have occurred in the Purcell Trench and the communities of Sandpoint and Bonners Ferry, Idaho. Additional fragmentation is occurring in the area surrounding Priest Lake, Idaho (Servheen et al. 2003, p. 26). At some future date, connecting these two bear populations across highways through the use of wildlife crossing structures (above or below ground culverts or passages where animals can cross high volume roads without risk of being struck by a vehicle) may become necessary to maintain linkage for this wide-ranging species. Wildlife crossing structures may also be considered in other fracture zones in the future.

If warranted in the future, the development of crossing structures for linkage is dependent on future interagency coordination and collaboration with the public, primarily because the highways and railroads that may be barriers for wildlife are not under the jurisdiction of the IPNF. However, the IPNF may manage lands near future crossing structures (i.e., approach areas) and have thus identified the need to manage lands near those features to maintain the effectiveness of those features. Because of the importance of linkage for grizzly bears, it is likely that they would be one of the species considered in the design of future crossing structures or maintenance or enhancement of lands near crossing areas to link blocks of habitat important to grizzly bears.

The Forest does have the capacity to ensure habitat conditions in the approach areas to linkage zones support continued use of existing areas of linkage and at future crossing structures. The IPNF also manages lands on either sides of highways and can enhance the potential for bears to cross by maintaining high quality habitat, including cover, for grizzly bears. The Revised Plan includes direction for linkage on the Forest through FW-DC-WL-18, which states that Forest management contributes to wildlife movement within and between national forest parcels; movement between parcels separated by other ownerships is facilitated by management of the NFS portions of linkage areas identified through interagency coordination; and Federal ownership is consolidated at approach areas to highway and road crossings to facilitate wildlife movement. This condition would be achieved through implementation of guidelines FW-GDL-WL-15 through 17. Specifically, FW-GDL-WL-15 through 17 require that IPNF coordinate with others on the development of crossing structures when major highways are reconstructed, and

that they manage lands near future structures to maintain the effectiveness of the structure and maintain Federal ownership in identified linkage areas.

To support and maintain connectivity across the Forest, the desired conditions for wildlife for MA1-wilderness and MA5-backcountry (MA1a,b,c,e-DC-WL-01 and MA5-DC-WL-01) state that these areas serve as large, remote areas with little human disturbance and habitat conditions that contribute to wildlife movement. Lastly, the GA direction and MA3-DC-WL-01 (in Special Areas) aids in maintaining grizzly habitat and connectivity across the Forest in those areas where it would have been found under natural disturbance processes (historical conditions) (USFS 2013a, p. 102). Specifically, the desired conditions in GAs that will facilitate grizzly bear linkage and habitat connectivity include:

> **GA-DC-WL-PR-01.** NFS lands provide habitat conditions for wildlife movement, especially woodland caribou, throughout the Selkirk recovery zone.
> **GA-DC-WL-PR-03.** Habitat conditions for wildlife movement on the divide between Idaho and Washington, from the Canadian border south are retained.
> **GA-DC-WL-LK-01.** National Forest System lands contribute habitat conditions for wildlife movement between the Yaak and the Selkirk Mountain range and between the Cabinet and the Selkirk mountain ranges.
> **GA-DC-WL-LK-02.** Use of the area along the divide between Idaho and Montana from Northwest Peaks south to the Kootenai River is retained.
> **GA-DC-WL-PO-01.** Habitat conditions are retained for wildlife movement along the divide between Idaho and Montana from the Kootenai River south to Scotchman Peaks and across the Clark Fork River and for wildlife movement between the Cabinet-Yaak ecosystem and the Selkirk Ecosystem.
> **GA-DC-WL-SJ-02.** Use of the area for wildlife movement along the Idaho/Montana divide between the Salmon and Selway/Bitterroot Wilderness Areas is retained.

Existing levels of fragmentation attributed to roads in BMUs would continue under the Revised Plan, and some proposed projects may cause localized adverse effects on connectivity for individual bears. However, we do not anticipate substantial negative effects on the population. This is attributed to the Access Amendment, which reduces or maintains moderate densities of open and total roads and provides large blocks of secure habitat where motorized use of roads and trails is prohibited. Notably, the IPNF took into consideration connectivity issues when setting the individual BMU access management parameters (USFS 2010a, p.50; Kaiser 2003 *In* USFWS 2011a, p. A-76). Additionally, the Revised Plan includes numerous provisions for linkage areas on the IPNF, including MA and GA direction for wildlife movement; and the Food Storage Order would reduce risk of human-bear conflicts in lower elevations with higher concentrations of human development. Therefore, we conclude that Forest Plan elements would support linkage conditions on NFS lands that are likely to foster movement of subadult and male

grizzly bears which are required for genetic recovery, (see *Status of the Species* section) and in time will also likely support linkage for females with cubs needed for demographic recovery.

More recently, the importance of BORZ in linking the recovery zones has been highlighted for the CYE and NCDE on the adjacent KNF. Females with cubs are regularly using the habitat and moving between NCDE and CYE (Kasworm et al. 2010, p.47; 2012, p. 16).

Because there are more allowable uses and higher road densities in BORZ, there are more existing effects on the baseline condition of linkages and connectivity. Under the Revised Plan, we expect that these areas will support grizzly bear movement and linkage on the whole, while causing some adverse effects on individual bears from site-specific projects. However, we do not anticipate substantial negative effects on the population. This is because the allowable uses under the Revised Plan are already occurring in the BORZ and yet bears are meeting resources needs, albeit at lower densities than in the recovery zones. Additionally, the Revised Plan implements the Access Amendment in BORZ which limits open and total road miles to no more than the existing baseline conditions, which supports some use by grizzly bears, including females with cubs. Notably, the IPNF took into consideration connectivity issues when setting the individual BMU access management parameters (USFS 2010a, p.50; Kaiser 2003 *In* USFWS 2011a, p. A-76) as well as the development of the BORZ polygons (USFS 2010a: Appendix F *In* USFWS 2011a, p. A-76). Lastly, the food storage order in BORZ will further facilitate connectivity between the recovery zones (and Canada) by limiting risk of conflicts between bears and humans.

These provisions to maintain baseline motorized access conditions in the BORZ and implement food storage orders would provide for continued use of these areas by grizzly bears and eventual linkage of the CYE and SE to other recovery zones, albeit at lower densities than areas within the recovery zones.

Effects of Sanitation/Food Storage and Information and Education Programs on Grizzly Bears Under the Revised Plan

Human-caused mortality of grizzly bears in the CYE and SE occurs disproportionately on non-federal lands than on NFS lands. To date, there have been no grizzly bear deaths associated with food attractants on NFS lands in the CYE and SE. There appears to be a strong relationship between poor huckleberry production and total grizzly bear mortality in the CYE and SE (see discussion above under Status of the Species).

General Effects of Sanitation/Food Storage and Information and Education Programs on Grizzly Bears

Improperly stored garbage, livestock or pet foods can lure grizzly bears to areas near people and pose a significant risk of habituating bears to human presence and/or conditioning grizzly bears to seek out anthropogenic foods and attractants. Food conditioned grizzly bears enter unsecured garbage receptacles, sheds and other buildings in search of a reward. Accessibility to human related attractants and conditioning to those rewards can lead to management removal of grizzly bears and additionally, mortality of grizzly bears by people defending their life and property. Bears are particularly susceptible to anthropogenic foods and attractants during years of poor

natural food production. The increase in total known mortality beginning in 1999 in the CYE is thought to be linked to poor food production during 1998 to 2004. Huckleberry production during these years was about half the 20-year average (Kasworm et al. 2012, p.33). Similar to the CYE, there appears to be a relationship between poor huckleberry production and total grizzly bear conflicts in the U.S. portion of the SE, but the sample size is limited and the conditions that elicit grizzly bear mortalities can be variable (W. Wakkinen 07/02/2013 pers. comm.).

Information and education programs, and food storage orders are particularly important during years of poor berry production and in seasons of high nutritional and energy needs for bears. On the Montana side of the CYE ecosystem, the MFWP has stated that perhaps the greatest advancement in the management of problem bears has been the development of dedicated bear management specialist positions (MFWP 2001 *In* USFWS 2011a, p. A-75).

To demonstrate the effectiveness, in the CYE, based on anecdotal information, there has been an increase in the number of residents seeking proactive help (e.g. fencing gardens, beehives and other attractants) to prevent conflicts prior to an incident and fewer incidents involving problem bears have occurred during recent years (Annis 2013). This represents notable progress toward reducing the potential for conflicts between people and grizzly bears, and in return reduces grizzly bear mortality. We believe the importance of these types of programs is often underestimated, as the effects of these programs work over time, in some cases many years as the attitudes and behavior of local residents and visiting public change. Through information and education, people can learn to live in a way that is more compatible with the needs and behaviors of grizzly bears. Education programs can reduce grizzly bear mortalities by instructing people to avoid situation where self-defense becomes necessary and prevent habituation of grizzly bears to unnatural foods. While the described program is specific to Montana, its implementation in the CYE portion of the KNF, benefits the CYE population as a whole.

While IDFG does not currently have full-time bear mitigation specialists like MFWP, there is a conservation officer whose duties are similar in many aspects to the bear management specialist positions. This position is funded for 3 months per year and primary duties include bear and caribou law enforcement and education projects (W. Wakkinen 07/02/2013 pers. comm.).

Further, the IPNF and cooperating agencies (Idaho Department of Fish and Game, Idaho Department of Lands) maintain and financially support a regular program of public information and education within the SE and CYE recovery zones.

Effects of Sanitation/Food Storage and Information and Education Programs on Grizzly Bears in the Action Area

The presence of food or other attractants may result in bear/human encounters that often lead to the relocation or the death of the bear. To date, there have been no grizzly bear deaths associated with food attractants on NFS lands in the action area (USFS 2012, p. 71). There has been a concerted effort to improve sanitation on NFS lands throughout the action area as a whole, with many campgrounds now having bear-resistant garbage and/or food storage containers to reduce

such encounters and the potential for subsequent habituation. Currently, all resort and recreation residence special use permits renewals in-or-near the recovery zones boundaries incorporate sanitation guidelines as part of the special use permit. Finally, all four Forests that encompass the CYE and SE recovery zones have implemented mandatory food storage orders that assist in minimizing this impact. The Service affirms these programs as key to avoiding conflicts associated with attractants on the IPNF.

Currently, the IPNF is a member of the Selkirk/Cabinet-Yaak Subcommittee of the Interagency Grizzly Bear Committee. Through this committee, the IPNF has participated in and implemented several information and education programs on the Forest. For example, in 2012 the Selkirk Grizzly Bear Law Enforcement and Education Project emphasized information and education programs by giving 45 grizzly bear presentations throughout northern Idaho and 2 grizzly bear workshops to the U.S. Border Patrol covering bear biology and conflict avoidance strategies. The Project also used an IGBC grant to obtain 3,000 grizzly bear coloring books for future education and outreach (Selkirk LE & Education Accomplishments 2012, accessed June 24, 2013, http://www.igbconline.org/index.php/selkirk-cabinet-yaak-subcommittee). The IPNF and cooperating agencies (Idaho Department of Fish and Game, Idaho Department of Lands) maintain and financially support a regular program of public information and education within the SE and CYE. Under the Revised Plan, these programs will continue through guideline FW-GDL-WL-18, which implements the elements of the most recent "Interagency Grizzly Bear Guidelines."

We expect that implementation of the Food Storage and Sanitation Special Order coupled with IPNF's other efforts to inform and educate the public as well as elements of the Revised Plan (FW-STD-WL-03 and FW-GDL-WL-18) would ensure that the risk of conflicts on the Forest remains low. We do not expect adverse effects to grizzly bears on the IPNF as a result of inadequate food and attractant storage.

Under the Revised Plan, Forest-wide desired conditions for recreation state that food and garbage storage do not contribute to recreation user/wildlife conflicts (FW-DC-AR-01; standard FW-STD-WL-03 requires permits and operating plans (e.g., special use, grazing, mining) to specify sanitation measures to reduce human/wildlife conflicts and mortality by making wildlife attractants (ex: garbage, food, livestock carcasses) inaccessible through proper storage or disposal. Additionally, the Revised Plan implements guideline FW-GDL-WL-18, which implements the elements of the most recent "Interagency Grizzly Bear Guidelines" that address attractants and other sources of sanitation issues on the forest (i.e., recreation and grazing).

We expect that implementation of the Food Storage and Sanitation Order coupled with IPNF's other efforts to inform and educate the public as well as elements of the Revised Plan (FW-STD-WL-03 and FW-GDL-WL-18) will ensure that the risk of conflicts on the Forest remains low. We do not expect adverse effects to grizzly bears on the IPNF as a result of inadequate food and attractant storage.

Effects of Grazing on Grizzly Bears Under the Revised Plan

General Effects of Livestock Grazing on Grizzly Bears

Grizzly bears may be attracted to grazing operations and facilities to forage on newborn animals or carcasses of dead livestock. Grizzly bear predation on livestock can result in risks to human life, property damage, or indirectly, in mortality through habituation and removal of a bear to protect human safety. Grizzly bears can benefit from feeding on livestock carcasses in remote locations away from people. However, when dead livestock occur near human dwellings or other areas with high levels of human activity, the potential for human/bear encounters may be high, which can eventually lead to the death of the bear through management actions. Less frequently, grizzly bears learn to prey on livestock on more remote grazing lands and become repeat offenders, removed from the population through management action.

Effects of Livestock Grazing on Grizzly Bears in the Action Area

To date, no grizzly bear/livestock conflicts have occurred on the IPNF.

The desired condition for grazing under the revised plan is that grazing occurs at sustainable levels in suitable locations while protecting resources (FW-DC-GRZ-01). Therefore, under the Revised Plan, grazing allotments will continue to be permitted within suitable areas but no changes in existing allotments are expected (USFS 2011a, p. 388-389). Cattle grazing is currently permitted in two allotments that overlap BMUs in the SE (14,328 acres) on the Forest. Grazing will be reduced in the SE and CYE under the Revised Plan by 33,598 acres in the SE and 8,525 acres in the CYE (Table II-14). However, the IPNF anticipates the number of allotments and number of AUMs to remain the same over the next 10-15 years.

Notably, the Revised Plan states that for wildlife the long-term desired condition is recovery of threatened and endangered species (FW-DC-WL-03). Therefore, changes to existing allotments and new requests for grazing allotments will be evaluated at the site-specific level in adherence with the elements of the Revised Plan. Additionally, FW-DC-GRZ-01 states that grazing occurs at sustainable levels while protecting resources and all permits will include sanitation measures to reduce attractants that will cause a human/livestock/bear conflict (FW-STD-WL-03). Additionally, the IGBC Guidelines for grazing will be applied (FW-GDL-WL-18). These elements of the Revised Plan along with the expectation that current use levels would be maintained reduce the likelihood of new grazing allotments where conflicts with bears might occur or that existing allotments might contribute to conflicts in the future.

We do not anticipate that implementation of the Revised Plan will result in habituation of grizzly bears leading to conflicts in the CYE and SE because few acres are subject to livestock grazing, current use is expected to continue (USFS 2011a, p.389), the Revised Plan includes measures to address potential risks to bears from livestock grazing, and there is no history of grizzly bear human-grizzly bear conflicts from grazing allotments in the CYE and SE on NFS lands. While grazing occurs in BORZ, these allotments have existed for several decades with no history of conflicts with grizzly bears. We expect that grizzly bear numbers in BORZ will grow relatively slowly over time, and so we expect the likelihood of conflicts associated with these allotments to

remain low. Hence, we do not consider this type of land use, at its current or anticipated levels, to result in adverse effects on grizzly bears.

Effects of Other Potential Actions on Grizzly Bears Under the Revised Plan

Other actions on the forest with the potential to affect grizzly bears include mining, collection of forest products, and operations associated with special use permits.

Effects of Mining on Grizzly Bears Under the Revised Plan

Mining encompasses: 1) the location and extraction of mineral materials (e.g., sand, gravel, rock), 2) the location and extraction of locatable minerals (e.g. gold, silver, copper), and 3) mineral leasing for oil, gas, coal, geothermal resources, potassium, sodium, phosphates, oil shale, and sulfur, which includes exploration and surface occupancy (extraction).

As discussed previously, there are no major mining operations on the IPNF at this time. There are currently 1,232 Plans of Operations for locatable minerals on the IPNF. Of these, 17 are located in grizzly bear recovery zones (SE=4; CYE=13). The majority of on-going activities are related to maintenance of existing facilities. Most locatable mineral operations are less than five acres in size. The IPNF considers the potential for future mineral discovery to be "low". There are approximately 434 active mineral material pits and quarries within the IPNF and of these 62 sites are located in the recovery zones (SE=26; CYE=36). Sites typically range from less than one acre to five acres in size. There are no leasable minerals located on the IPNF at this time and potential is considered "low". As such, little commercial interest in leasing for such resources is anticipated. Therefore, even though the number of acres of grizzly bear habitat where leasable mineral activities[8] will be allowed increases under the Proposed Action in both recovery zones (216,077 acres in the SE and 154,388 acres in the CYE (Tables II-13 and II-14), this is not expected to have a significant effect on grizzly bear habitat. Conversely, the acres of grizzly bear habitat where mining of locatable and materials will be allowed will be reduced by approximately 182,827 acres in the SE and 80,292 acres in the CYE (Tables II-13 and II-14). However, future mining activities could occur in grizzly bear habitat under the Revised Plan.

Such activities may result in loss of habitat within the footprint of the mine, disturbance to grizzly bears from road use and mining activities, displacement from habitat from road use or mine development, or impacts to habitat connectivity. The range of effects of future mining activities on grizzly bears is expected to be similar to those occurring at existing mining sites (Troy Mine and Rock Creek Mine in the CYE on the KNF). The extent of these effects will be limited by elements of the Revised Plan. Any mining proposal on the Forest would be considered in terms of Forest-wide desired conditions that trend the Forest toward providing remote areas for species with large home ranges, recovering Federally-listed species, facilitating

[8] A leasble analysis was completed for the 1987 plan and areas were identified where no leasing could take place. However, because the potential is so low for the IPNF, the Proposed Action did not complete such an analysis. Hence, 'on paper' there appears o be an increase in mineral leasing capability when in reality this is not the case.

denning and habitat use through low levels of disturbance, and managing motorized access to promote recovery (FW-DC-WL-01 through 05). At the project level, Forest-wide guidelines and standards would address potential effects of mining proposals on connectivity and linkage areas (FW-GDL-WL-15 through 17), food storage and attractants (FW-STD-WL-03, Food Storage Order), disturbance of grizzly bears (FW-GDL-WL-01), and access management (FW-STD-WL-02). Effects would also be limited through site-specific project development, mitigation, and site-specific consultation.

Combined, this direction will reduce or limit the potential impacts of mining activities on grizzly bears. Some adverse effects on bears are anticipated if future mining activities are proposed, but we expect that the potential for adverse effects will be reduced or minimized through Revised Plan requirements and standards and guidelines applied at the project level. Any additional effects from mining will be related to site- and plan- specific details and will be identified and addressed at the project level. Combined, the Revised Plan elements and required mitigation plans (such as those developed for the Troy and Rock Creek mines on the KNF) would reduce or limit the impacts of mining activities on grizzly bears such that adverse effects are not anticipated for the population.

Effects of Collection of Forest Products on Grizzly Bears Under the Revised Plan

Special forest and botanical products may be collected Forest-wide, unless an area has been closed for a specific reason. The acres of grizzly bear habitat where commercial and personal collection of other forest products will be allowed are reduced under the Proposed Action in both recovery zones on the IPNF. The acres of grizzly bear habitat where commercial and personal collection of other forest products will be allowed are also reduced under the Proposed Action in both recovery zones on the IPNF (Tables II-13 and II-14).

Commercial use of special forest and botanical products is not allowed in designated wilderness; recommended wilderness; wilderness study area; wild, scenic and recreational rivers; special areas; or RNAs. The opportunity for collecting special forest and botanical products is also affected by the amount of motorized access to the Forest. Areas with no motorized access (i.e., core areas) limits opportunities and reduces the ability to collect products. Existing uses are often tied to historical knowledge and patterns of use. The most popular special forest and botanical products on the Forest include huckleberries, firewood, Christmas trees, and boughs. Mushroom picking is a popular activity following wildfires.

The primary effect on bears associated with collection of forest products is disturbance and risk of human/grizzly bear conflicts, and we expect that these risks are low. Generally, the collection of forest products occurs in close proximity to roads and the density of people engaged in this activity diminishes with increasing distance from a road or trail. Areas adjacent to roads are typically avoided by bears (McLellan and Shackleton 1988, p.456; Mace et al. 1996, p. 1403). Human presence for collection of forest products may disturb or displace bears, but we anticipate this effect will likely be short-term, temporary and for the most part, relatively low in intensity. We expect that grizzly bears will avoid the area while people are collecting products, but are likely to return after people leave the area. The Revised Plan adequately manages roads and core area, so if displaced by human presence and activity, grizzly bears will have options to find

needed food and shelter elsewhere. There will be areas on the Forest that will have very little or no collection of forest products due to limited accessibility. As discussed above, we anticipate that the information and education programs, Food Storage Order, IGBC Guidelines, and access management will reduce the risk of conflicts. Forest-product collection activities are subject to these measures and so we expect no adverse effects to grizzly bears as a result of Forest-product collection.

Effects of Special Uses on Grizzly Bears Under the Revised Plan

Special use authorizations permit occupancy and use on NFS lands by federal, state and local agencies, private industry, and individuals. Non-recreation special uses vary from low-intensity, often short-term actions such as filming or locations for scientific instruments, to larger developed facilities such as roads, communication sites, dams, and utility/energy transmission infrastructure. Special use permits may allow activities that cause disturbance to grizzlies due to human activities or risk of human/grizzly bear conflicts, resulting in grizzly bears avoiding the area. The IPNF currently has 190 recreation Special Use Permits and agreements. Outfitter and Guides also operate on NFS lands under special use permit. Currently, there are two outfitter and guides which operate within the SE with one of these extending their operations into the Priest Lake BORZ. Three additional outfitter and guides operate in the CYE. Three of these Outfitter and Guides are allowed to use snowmobiles as part of their permit (i.e. two in the SE; one in the CYE). The permitting of special uses will not be changed with implementation of the Proposed Action, including the requirement for a permit specific analysis for any renewals or modifications to existing permits or proposed new permits to insure compliance with the Forest Plan.

Special uses can also alter some habitat, such as a ski area or utility corridor. There are no existing proposals that will remove or alter large areas.

Under the Revised Plans, future proposals will be considered in terms of Forest-wide desired conditions that trend the forest toward providing remote areas for species with large home ranges, recovering Federally-listed species, facilitating denning and habitat use through low levels of disturbance, and managing motorized access to promote recovery (FW-DC-WL-01 through 05, FW-DC-AR-07). From a disturbance perspective, the Proposed Action will have more of areas (i.e., areas available with a lower likelihood of human disturbance (wilderness, roadless, etc.) available for bears, compared to existing conditions. FW-STD-WL-02, MA1a-DC-WL-01, MA1b-DC-WL-01, MA1c-DC-WL-01, MA1e-DC-WL-01, MA3-DC-WL-01, and MA5-DC-WL-01 create and maintain large, remote security habitats that are likely to have a lower amount of human use due to the difficulties of access.

At the project level, Forest-wide guidelines and standards will address potential effects of special use permits on connectivity and linkage areas, food storage and attractants (FW-STD-WL-03) and Food Storage Order), disturbance of grizzly bears (FW-GDL-WL-01), and access management (FW-STD-WL-02).

Special uses are less likely in MA1a or MA1c. Additionally, some Special uses authorizations are less likely to be considered in MA1, MA2, MA3, or MA4 (USFS 2013a, p. 292) because

these areas are managed to protect their special values. National Forest System lands that provide secure habitat or contribute as linkage areas are also less likely to be considered for disposal or exchange (USFS 2013a, p. 292). Therefore, special uses are less likely to occur inside BMUs in the action area.

Combined, the Revised Plan direction and extensive areas where special uses are less likely to be authorized will reduce or limit the potential impacts of special uses on grizzly bears. We anticipate no adverse effects to grizzly bears as a result of most special use permits. However, large-scale permitted activities such as ski areas or utility corridors may result in habitat loss or other adverse effects, but we expect these effects to be lessened by measures detailed above. Exceptions would be infrequent and related to large scale activities and would be addressed at the project level.

However, in the 10-15 year term of the Revised Plan, large-scale proposals may arise that result in adverse effects on individual grizzly bears. However, for the reasons described above, and the fact that the Revised Plan implements the IGBC guidelines for MS 1 (see Section A.2), which encompasses all of the CYE and SE recovery zones and favors the needs of grizzly bears when grizzly habitat and other land use values compete, we do not expect substantial negative effects on the population.

3. Species' Response to the Proposed Action

Species' Response in the CYE Portion of the Action Area

The CYE grizzly bear population has a slightly declining trend, but improved since 2006 (Figure 11-4). Beginning in 2006, the rate of change in the population (lambda) has improved and moved closer to stability (Kasworm 2013 unpublished data); this is an indication that the status of the CYE grizzly bear population is improving. Telemetry data and sightings, including females with cubs, confirm occupancy of some BORZ by grizzly bears (Kasworm et al. 2012, p. 16, Table 2).

The overwhelming majority of adverse effects from Forest management projects arises from roads and associated high road densities and motorized access resulting in disturbance and displacement of grizzly bears. High motorized route densities provide people with easy access into grizzly bear habitat, which contributes to potential increased risk of human-bear conflicts resulting in human-caused grizzly bear mortality – one of the primary factors affecting the CYE population. We conclude that the Revised Plan, grizzly bear Access Amendment, and food storage order would continue to substantially reduce adverse impacts to grizzly bears from Forest management activities within the action area.

Grizzly bears are given high priority in Forest management inside the Recovery Zone; grizzly bears are not the primary management consideration in Forest land management in the action area outside of the recovery zone. Grizzly bears outside the recovery zone probably experience a higher level of adverse impacts due to land management actions than do grizzly bears inside. However, a number of grizzly bears, including females, regularly occur in habitat outside of the

recovery zone (USFWS 2011a, p. A-72). We expect this occupancy to continue, albeit at lower densities than expected in fully functioning habitat.

Existing and proposed road densities authorized under the Revised Plan have the potential to adversely affect some grizzly bears in some portions of the action area. However, the Access Amendment moderates effects of roads on bears by limiting the density of open and total roads and maintaining core areas within the recovery zones on the IPNF over time (standards expected to be achieved by 2019). In the CYE, all but 2 BMUs would achieve the research benchmark for core areas, OMRD, and TMRD. Of these 2 BMUs one would also meet the research benchmark for core, thereby reducing the effects where OMRD/TMRD research benchmarks would not be met. The maintenance of good quality core areas within these BMUs may lessen the overall displacement impacts to grizzly bears related to the relatively high OMRD and TMRD outside the core by providing ample amounts of relatively secure habitat within home ranges (USFWS 2011a, p. A-67). Grouse BMU does not meet research benchmark for core and may never be capable of providing the full suite of home range needs of the average adult female grizzly bear due to small size and/or private ownership and /or other constraints. Thus, sub-optimal conditions may persistent in the long-term for this BMU. We expect some bears to continue using BORZ, including females, despite suboptimal conditions, albeit at lower densities than grizzly bears in the recovery zones.

As described in detail earlier in this biological opinion, the primary adverse effect that may result in impairment of feeding, breeding, and sheltering activities by grizzly bears under the Revised Plan is attributed to the effects of high road densities. The implementation of the Access Amendment through 2019 would lessen these adverse effects including those that are likely to impair breeding, feeding and sheltering. As characterized in the Access Amendment biological opinion and reiterated in this biological opinion, the Access Amendment significantly reduces incidental take attributed to high road densities but does not reduce the possibility of incidental take in all BMUs.

Over the life of the plan, adverse effects may result from displacement of a very few female grizzly bears with cubs by snowmobile activities during the den emergence period. The Revised Plan would not increase this adverse effect, and overtime, it may decrease the adverse effects. As characterized in the effects analysis above, there is a low likelihood of effect on 14,250 acres (19 percent on the IPNF and 9 percent on the KNF and IPNF combined) of denning habitat in the CYE and the risk of effect would be limited to the period of time from female and cub den emergence (third week of April) and spring snow melt (these dates would vary year to year). Once winter travel plans are in place, the Revised Plan could decrease the acres of overlap between grizzly bear denning habitat and snowmobile activities.

Under the Revised Plan, other, site-specific projects may result in adverse effects to individual grizzly bears primarily associated with vegetation management activities (timber harvest or prescribed fire) creating larger opening sizes; potential mining proposals; large-scale special use permits; and use of helicopters during vegetation management activities. As discussed in the analysis of effects, we expect these activities to occur infrequently and associated adverse effects to be reduced by the elements of the Revised Plan such that we do not anticipate substantial negative effects on the population.

As stated, the grizzly bear population is slightly declining, but trend is now approaching stability (Figure II-4). Since 2006, the rate of decline in the CYE grizzly bear population has slowly, steadily improved. Further, the number of grizzly bears in the Cabinet Mountains has increased through augmentation and reproduction, and a number of grizzly bears are occupying habitat in the BORZ. Since 2011, the IPNF has fully addressed two of the three primary forms of mortality on NFS lands: access and road densities and attractant/food storage conflicts. There have been no grizzly bear mortalities on the IPNF related to the third primary source of mortality: livestock grazing conflicts. Hence, the anticipated adverse effects of the Revised Plan may affect a few individual bears but are not expected to have appreciable negative effects on the CYE population of bears.

Species' Response in the SE Portion of the Action Area

It was estimated in 2004 that the population of grizzly bears in the SE was slowly increasing at a rate of 1.9 percent annually (Wakkinen and Kasworm 2004, p.72). Recently, Wakkinen indicated that there is no evidence that would suggest any major changes from the 2004 population growth rate; however, this will be updated in upcoming years (W. Wakkinen 07/02/2013 pers. comm.).

The overwhelming majority of adverse effects from Forest management projects arises from roads and associated high road densities and motorized access resulting in disturbance and displacement of grizzly bears. High motorized route densities provides people with easy access into grizzly bear habitat, which contributes to potential increased risk of human-bear conflicts resulting in human-caused grizzly bear mortality – one of the primary factors affecting the SE population. We conclude that the Revised Plan, grizzly bear Access Amendment, and Forest-wide food storage order would continue to substantially reduce adverse impacts to grizzly bears from Forest management activities within the action area.

Grizzly bears are given high priority in Forest management inside the Recovery Zone; grizzly bears are not the primary management consideration in Forest land management in the action area outside of the recovery zone. Grizzly bears outside the recovery zone probably experience a higher level of adverse impacts due to land management actions than do grizzly bears inside. However, a number of grizzly bears are apparently using habitat within the BORZ. We expect this occupancy to continue albeit at lower densities than expected in fully functioning habitat.

Existing and proposed road densities authorized under the Revised Plan have the potential to adversely affect some grizzly bears in some portions of the action area. However, the Access Amendment moderates effects of roads on bears by limiting density of open and total roads and maintaining core areas within the recovery zone over time (standards expected to be achieved by 2019). In the SE, 7 of the 8 BMUs would achieve the research benchmark for core areas, OMRD, and TMRD. The Lakeshore BMU does not meet research benchmark for core, OMRD, or TMRD and may never be capable of providing the full suite of home range needs of the average adult female grizzly bear due to small size and/or private ownership and /or other constraints. Thus, sub-optimal conditions may persist in the long-term for this BMU. Importantly, the Lakeshore has never been expected to function like the other BMUs due to its small size and proximity to heavily used recreation areas and as such is managed as both MS1 (9,872 acres) and MS3 (8,093

acres). Additionally, we expect some bears to continue using BORZ, including adult females, despite suboptimal conditions, albeit at lower densities than grizzly bears in the recovery zones.

As described in detail earlier in this biological opinion, the primary adverse effect that may result in impairment of feeding, breeding, and sheltering activities by grizzly bears under the Revised Plan is attributed to the effects of high road densities. The implementation of the Access Amendment through 2019 would lessen these adverse effects including those that are likely to impair breeding, feeding and sheltering. As characterized in the Access Amendment biological opinion and reiterated in this biological opinion, the Access Amendment significantly reduces incidental take attributed to high road densities but does not reduce the possibility of incidental take in all BMUs.

Over the life of the plan, additional adverse effects may result from displacement of a very few female grizzly bears with cubs by snowmobile activities during the den emergence period. The Revised Plan would not increase this adverse effect, and overtime, it may decrease the adverse effects. As characterized in the effects analysis above, there is a low likelihood of effect on 7,440 acres (6 percent) of denning habitat in the SE and the risk of effect would be limited to the period of time from female and cub den emergence (third week of April) through spring snow melt (these dates would vary year to year). Once winter travel plans are in place, the Revised Plan could decrease the acres of overlap between grizzly bear denning habitat and snowmobile activities.

Under the Revised Plan, other, site-specific projects may result in adverse effects to individual grizzly bears primarily associated with vegetation management activities (timber harvest or prescribed fire) creating larger opening sizes; potential mining proposals; large-scale special use permits; and use of helicopters during vegetation management activities. As discussed in the analysis of effects, we expect these activities to occur infrequently and associated adverse effects to be reduced by the elements of the Revised Plan such that we do not anticipate substantial negative effects on the population.

E. 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 ESA. Past and present impacts of non-Federal actions are part of the "environmental baseline" as are the impacts of Federal activities that have undergone section 7 consultation.

Due to the broad geographic scope of the Revised Plan and, therefore, the action area, it is difficult to comprehensively assess all of the future, non-Federal activities reasonably certain to occur in the action area that may affect the grizzly bear populations in the CYE and SE. This analysis of cumulative effects is based on an assessment of land ownership and use patterns, and the patterns of grizzly bear mortality caused by non-Federal activities, as discussed above in the Status of the Species and Environmental Baseline sections.

State and private lands comprise approximately 10 percent of the CYE recovery zone. In the U.S. portion of the SE, land ownership is approximately 80 percent Federal, 15 percent State, and 5 percent private lands. Within the SE, 3 percent (39,976 acres) is designated Wilderness Area. There are approximately 370,000 acres of private, state and corporate timber land inholdings within the IPNF boundary. In terms of BMUs and BORZ, approximately 74,050 and 23,785 acres of private, state and corporate timber lands occur, respectively, within these two boundaries on the IPNF. In the SE, private and state land includes approximately 24,980 acres in BMUs and 10,712 acres in BORZ. In the CYE, private and state land includes approximately 49,070 acres in BMUs and 13,073 acres in BORZ. Timber harvest, road construction, and fuels reductions efforts occurring on private or State, lands may impact the distribution, amount, and quality of grizzly habitat within the recovery zones and may impact connectivity between NFS lands in the action area. Impacts from these activities may also impact recurring use by grizzly bears within the BORZ. Human activities may cause avoidance of these areas, or conversely, increase the potential for habituation and subsequent removal or death of these bears for public safety. Decisions made by non-Federal landowners regarding management of their lands could potentially result in cumulative disturbance, displacement, or increased risk of human/grizzly bear conflicts. Timber harvest and developments on private or State lands may also affect connectivity within the action area.

The LeClerc BMU in the SE is comprised of checkerboard ownership between the Colville National Forest and Stimson Lumber Company. Stimson Lumber Company manages approximately 21,000 acres of the land within the LeClerc BMU and has entered into a Conservation Agreement with Colville National Forest and the Service to minimize adverse effects to grizzly bears (USFWS 2001c, pp.53-54). This Agreement requires Stimson and the Colville to leave hiding cover within created openings, along open roads, and within riparian habitats. Stimson is also required to log during the winter in some areas to reduce disturbance and report logging activities and road entries to the Colville National Forest annually. The Service's biological opinion (ibid) on that Agreement included an incidental take statement with terms and conditions providing for no net decrease in core area habitat or an increase in TMRD on affected Forest Service lands.

Recreation is likely to increase on all land ownership types, if for no other reason than human population growth. From 1980 until 2009 the human population increased in all of the counties that overlap the IPNF, (USFS 2012, p. 94). Increases in human population and new or improved technologies (e.g. mountain bikes, ATVs, snowmobiles, etc.) have led to more crowded recreation experiences during peak use times and increased levels and range of demands on resources on the IPNF and adjacent state and private lands, particularly those providing access or similar recreational experiences. Increases in recreational use in the action on non-federal lands area may contribute to disturbance and cause the portions of NFS lands that have lower human disturbance to become more important for grizzlies. Additionally with increased human presence on all land ownerships, along with progress toward our goal of increasing grizzly bear numbers in the CYE and SE, there is potential for an increase in human/bear conflict, which may result grizzly bear mortality.

The State of Idaho continues to allow hunting for black bears, as well as other wildlife species, within and around the SE and CYE. This has the potential to result in grizzly bear mortality as a result of mistaken bear identification or self-defense within the action area.

Idaho began a voluntary black bear hunter testing and certification program in 2011 to help educate hunters in distinguishing species and reducing mistaken identity and reducing grizzly bear mortalities. The IPNF and cooperating agencies (Idaho Department of Fish and Game, Idaho Department of Lands) maintain and financially support a regular program of public information and education within the SE and CYE. These programs reduce and contribute to offsetting the risks of bear/human conflicts and human-caused mortality of grizzly bears. .

The Grizzly Bear Access Amendment established management direction for roads and secure habitat on NFS lands within the action area. However, the BMUs in the action area also include some state and private lands and decisions made on State and private lands could potentially result in cumulative disturbance or displacement effects on grizzly bears. The calculations used for determining road densities and core areas on NFS lands include roads on state and private lands within the BMUs considered in this action, even though standards set by the Access Amendment apply only to NFS lands. Therefore, activities on non-federal lands may in some cases limit discretion for road use on federal lands in order to meet standards (USFWS 2011a, p. A-75). In other words, this will partially offset or moderate cumulative effects of road densities and core areas on state and private lands.

Climate change could have varied impacts on grizzly bears and their habitats, especially when combined with fire (or fire suppression), insects, and disease effects on habitat. Past fire suppression has led to an increase in fuels, denser forests that are more susceptible to insects and disease, and forests that are less resilient and sustainable. Large, stand-replacing disturbance will be more likely and may be exacerbated as the climate changes. All lands in the action area will be susceptible to these events, although non-Federal landowners are unlikely to allow these areas to burn and will likely aggressively attempt to control such fires. Large-scale disturbances could convert a large area of grizzly habitat from forested to open in one event. This will alter the availability of grizzly bear foods and cover, potentially changing how bears use the landscape.

In summary, developments, timber activities, recreational use and roads on state and private lands in the action have the potential to result in cumulative effects on grizzly bears in the action area. Potential effects include disturbance and displacement, fragmentation of habitat and human/grizzly bear conflicts resulting in mortality of bears. The vast majority of the CYE and SE recovery zones are NFS lands, yet a disproportionate number of bears are killed on private lands. The implementation of the Access Amendment on Federal lands, which takes into account actions on private lands; hunter education programs, and grizzly bear outreach programs; and the Stimson (LeClerc BMU) Conservation Agreement with Colville National Forest all address other conservation needs for the species and contribute to offseting cumulative effects of mortality on private lands. At this time, the cumulative effects on grizzly bears on state and private lands contribute to the inability to meet the demographic criteria for human-caused mortality and mortality of female bears in the CYE. However, both the CYE and SE populations are increasing and the programs described above to offset the effects of human-caused mortality

appear to be helping stabilize the populations. Therefore, the cumulative effects are not expected to result in substantial negative effects on the population.

F. CONCLUSION

After reviewing the current status of the grizzly bear, the environmental baseline for the action area, the effects of the action and the cumulative effects, it is the Service's biological opinion that the effects of the proposed Revised Plan are not likely to jeopardize the continued existence of the grizzly bear. No critical habitat has been designated for this species therefore none will be affected.

Regulations implementing section 7 of the Act define "jeopardize the continued existence of" as: "to engage in an action that reasonably will be expected, directly or indirectly, to reduce appreciably the likelihood of both survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." (50 CFR 402.02).

The best information suggests that implementation of the Revised Plan will not appreciably reduce the likelihood of survival and recovery of grizzly bears in the CYE or SE. Our conclusion is based on the literature and information referenced in this document, meetings and discussions with IPNF, discussions with grizzly bear experts, the information in the biological assessment prepared for the Revised Plan (USFS 2013a), the information in the Draft EIS (USFS 2011b), and information in our files. The *Effects of the Action* section analyzed and summarized key factors in detail.

The Service's section 7 handbook explains that adverse effects on individuals of a species generally do not result in jeopardy determinations unless that loss when added to the environmental baseline, is likely to result in an appreciable reduction of the likelihood of both survival and recovery of a listed species in the wild by reducing the reproducing, numbers, or distribution of that species. In our analysis for grizzly bears, we first conduct such an analysis relevant to the CYE and SE grizzly bear populations, and then use those determinations to determine the impact of the proposed action on the species.

The proposed Revised Plan incorporates the 2011 Access Amendment. This direction results in an increase in core area and reduces motorized route densities. Thus, the proposed action will reduce adverse effects on grizzly bears, including significant impairment of breeding, feeding and sheltering of female grizzly bears, related to displacement of grizzly bears from roads. In the CYE and SE, Revised Plan management of core area and motorized access also indirectly limits the amount of grizzly bear habitat in BMUs (and subunits) affected by Forest management activities that generate noise and other disturbance (e.g. timber harvest and recreation) by limiting the road access needed for these activities. Motorized access management also reduces the potential for conflicts between grizzly bears and people by limiting motorized access into grizzly bear habitat. In the CYE and SE recovery zones, the Revised Plan would result in an overall improvement in motorized access conditions in grizzly bear habitat, and would avoid or minimize incidental take of grizzly bears related to displacement from roads; support and sustain habitat for female home range use and reproduction; limit disturbance from project related activities; and reduce mortality risk to grizzly bears, benefitting the grizzly bear population. As a result, overall, the adverse effects of roads prior to and remaining once the access direction is

fully implemented are substantially outweighed by the benefits of access management to grizzly bears, and so are likely to have only negligible effects on the CYE and SE grizzly bear populations. Thus, we conclude that Forest Plan direction supports recovery and survival in both ecosystems.

The Revised Plan limits linear miles of open or total permanent roads to the existing baseline condition in areas outside of the recovery zones but inhabited by grizzly bears (BORZ). Therefore, the level of adverse effects related to displacement from roads in these areas, including impairment of breeding, feeding, and sheltering of females, would not increase in the BORZ. In addition, the recent Forest-wide Food Storage Order would reduce the potential risks of habituation and human-caused mortality of bears in the BORZ. Outside of the 10 – mile buffer around the recovery zone, demographic information from grizzly bears in the BORZ is not used to assess CYE or SE grizzly bear population status, and the Recovery Plan states that habitat within recovery zones, managed for grizzly bear use, is adequate to recover bear populations. Further, even at low densities, grizzly bear use of areas between recovery zones, including females with cubs, would promote the likelihood of both genetic and demographic recovery of the CYE and SE grizzly bear population in the future. Even with the existing high road densities that likely result in adverse effects, grizzly bears are still using these areas. Therefore, we conclude that the Revised Plan direction for access management would support continued use of the area by grizzly bears.

The Revised Plan motorized access direction thus increases conditions that support and sustain female home range use for reproduction in the recovery zone, maintains conditions supporting grizzly bear use in the BORZ, reduces mortality risk to grizzly bears in both areas in combination with the food storage order, and promotes linkage between the CYE and SE, so benefitting both populations. Thus, Forest Plan direction supports recovery and survival of grizzly bears.

Snowmobile use in the CYE and SE subunits may result in adverse effects, including the potential for a low amount of impairment of breeding, feeding, and sheltering of a very few females. Adverse effects resulting in such impairment are expected to occur only infrequently, affect very few females, and would be limited to a short period during spring in limited areas where late season snowmobile use currently overlaps with denning habitat. This overlap where denning habitat is available for snowmobiling could decrease under the Revised Plan as Winter Travel Plans are completed; the desired condition calls for a Forest-wide decrease in of 47,093 acres available to snowmobiling. Our analysis indicates that Revised Plan direction would not increase adverse effects associated with snowmobiling. Adverse effects on grizzly bears under the Forest Plan, prior to completion of the Winter Travel Plan, are very limited and further reduced by guidelines and standards that are immediately in place and limit grooming of snowmobile routes after April 1 and restrict management activities in denning habitat from April 1 to May 1. Therefore, any effects from snowmobiling during the den emergence period are unlikely to result in substantial adverse effects to the CYE or the SE grizzly bear populations.

The biological opinion also analyzed a number of other project or activity types allowed under the Revised Plan, some of which could result in adverse effects and less frequently, impairment

of breeding, feeding and sheltering. These include the creation of larger opening sizes, mining proposals, large-scale special use permits, and use of helicopters for vegetation management activities. As detailed in the opinion, Revised Plan desired condition trends the forest toward a system of large, remote areas with limited human disturbance for wildlife, and trends the forest toward the recovery of listed species over the long-term. The Revised Plan would also reduce the likelihood of adverse effects from these actions, and/or would minimize the impacts of many adverse effects on grizzly bears. As such we conclude that although some individual bears may be adversely affected, these effects (including potential take), would not rise to the levels that would have substantive impacts on either the CYE or SE grizzly bear populations.

Thus, when added to the environmental baseline, and considering the status of the species and cumulative effects in the action area, the Revised Forest Plan would not appreciably diminish the likelihood of survival and recovery of the CYE or the SE grizzly bear populations.

Our non-jeopardy conclusion is further supported by the following factors, as detailed earlier in this biological opinion

Factors Related to Access Management

It is the Service's opinion that the level of open and total road densities, and security core area within the action area, as directed by the Access Amendment and incorporated into the Revised Plan, adequately conserves effective grizzly bear habitat and promotes the recovery and survival of the CYE and SE grizzly bear populations. It is our opinion that the Revised Forest Plan direction for access management does not appreciably reduce the likelihood of both the survival and recovery of grizzly bears in the CYE, SE or BORZ.

- In the CYE, motorized access management under the Revised Plan conserves and/or increases habitat for female home range use in the majority of BMUs, and so supports the distribution and reproduction of grizzly bears. Four of the 6 BMUs in the CYE would meet (or be better than) the research benchmarks for OMRD, TMRD, and core area. These BMUS each would provide levels of secure habitat adequate to support breeding, feeding, and sheltering activities for grizzly bears, including females (USFWS 2011b, p. A-65). Adverse effects of road densities would be avoided.

- In the SE, motorized access management under the Revised Plan conserves and/or increases habitat for female home range use in the majority of BMUs, and so supports the distribution and reproduction of grizzly bears. Seven of the 8 BMUs in the CYE would meet (or be better than) the research benchmarks for OMRD, TMRD, and core area. These BMUS each would provide levels of secure habitat adequate to support breeding, feeding, and sheltering activities for grizzly bears, including females (USFWS 2011b, p. A-65). Adverse effects of road densities would be avoided.

- Through 2019, a low amount of adverse effects and impairment of breeding, feeding and sheltering would occur in those BMUs in the CYE and SE not yet meeting research benchmarks. Once research benchmarks are met in a BMU, we anticipate no adverse

effects to grizzly bears as a result of motorized access. The plan would increase core area to 58.5 percent of the CYE recovery zone by 2019 (USFWS 2011, p. A-60). Thus the Revised Plan direction for motorized access supports recovery in the CYE and SE.

- For the one remaining BMU in the CYE that does not meet OMRD and/or TMRD benchmarks, we anticipate a low level of adverse effects associated with high road densities. This is because this BMU meets the core benchmarks. The maintenance of good quality core areas within this BMUs may lessen the overall displacement impacts to grizzly bears related to the high OMRD and TMRD outside the core by providing ample amounts of relatively secure habitat within home ranges (USFWS 2011b, p.A-67). Therefore, we expect the affected BMU to continue to support grizzly bears albeit at lower densities than in fully functional BMUs. Under the Access Amendment, just one BMU in the CYE action area (Grouse) and one BMU in the SE action area (Lakeshore) would not meet the research benchmark for core area. Given the Revised Plan direction for the CYE and SE recovery zones overall, the adverse effects related to road densities (access management) in these two subunits would likely be insignificant to the grizzly bear population.

- In BORZ, we anticipate that linear miles of road are likely causing adverse effects on grizzly bears. The IPNF had not specifically managed for grizzly bear habitat relative to road standards outside of the recovery zones until implementation of the Access Amendment. The Access Amendment limits linear miles of open and total permanent roads to the baseline condition in BORZ. The Access Amendment does allow temporary increases in linear miles of total roads, but these roads must be closed to public access and total roads returned to baseline after the project is complete. Overall, these provisions limit the adverse effects of roads on grizzly bears in these areas. The Revised Plan would retain the motorized access conditions in BORZ; conditions that currently allow some use by grizzly bears.

- Additional adverse effects may occur where snowmobile activities occur in the late season in proximity to denning habitat including 14,250 acres in the CYE and 7,440 acres in the SE. The likelihood of an adverse effect is low for all the reasons described in the Analysis of Effects. Because females with cubs/young are most likely to stay in the vicinity of the den sites until later in spring, this segment of the population may be most exposed to late season snowmobiling, while males and lone females probably move to lower, snow-free elevations. Once winter travel plans are in place, the Revised Plan could decrease the acres of overlap between grizzly bear denning habitat and snowmobile activities.

- The Proposed Action direction would not increase the existing level of adverse effects on grizzly bears in the CYE and SE resulting from use of snowmobiles. Individual grizzly bears may be adversely affected where late season snowmobile activities occur in denning habitat, including 14,250 acres (19 percent of total denning habitat in the action

area) in the CYE (9 percent of the total denning habitat on both Forests in the CYE recovery zone) and 7,440 acres in the SE subunits (6 percent of denning habitat in the action area in the SE). The likelihood of adverse effects to individual grizzly bears is very low for all the reasons described in the Analysis of Effects, including Revised Plan elements (FW-DC-WL-01; FW-DC-WL-04; FW-GDL-WL-01; and FW-STD-WL-04). We anticipate adverse effects would be so infrequent and affect so few females that effects of snowmobile use would not be likely to have substantial impacts on the grizzly bear population in CYE or SE.

Factors Related to Attractants and Food Storage

It is the Service's opinion that the mandatory Food Storage and Sanitation Special Order implemented in 2011 on the IPNF contributes to the survival and recovery of the CYE and SE grizzly bear populations. There have been no grizzly bear mortalities on the IPNF related to livestock grazing allotments or food storage/attractants. The IPNF has taken numerous actions to minimize the risk of habituation/food conditioning to grizzly bears. We expect that continuation of these programs as well as elements of the Revised Plan that address attractants and food storage would ensure that the risk of conflicts on the IPNF remains low.

- The Revised Plan implements the IGBC Guidelines to minimize grizzly bear-human conflicts in accordance with the grizzly bear Management Situation designations on the IPNF. The IPNF will follow the IGBC Guidelines for nuisance bear management. The Guidelines are embedded in the Revised Plan (FW-GDL-WL-18).

- The IPNF's existing livestock grazing program has avoided adverse effects on grizzly bears. There are no allotments on IPNF lands in the CYE; just two on the SE; and portions of two additional cattle grazing allotments (approximately 3,930 acres) situated in the Priest River BORZ. No changes in existing allotments are expected and current use levels are expected to be maintained for the next 10 to 15 years (USFS 2011b, pp.388-389). Thus, we do not consider this type of land use, at its current or anticipated levels, to result in adverse effects on grizzly bears in the recovery zone or BORZ.

- There is a food storage order on the IPNF (USFS 2013a, Appendix F). Information on the Order is provided to forest users through information pamphlets at visitor centers, trailheads and kiosks and the IPNF website.

- The Revised Plan requires permits and operating plans (e.g., special use, grazing, mining) to specify attractant storage measures to reduce human/wildlife conflicts and grizzly bear mortality by making wildlife attractants (ex: garbage, food, livestock carcasses) inaccessible through proper storage or disposal (FW-STD-WL-03).

Other Factors Affected by the Revised Plan

The Revised Plan desired conditions and standards and guidelines (in addition to and/or other than those related to motorized access management) applied at the project level would avoid, reduce, or minimize adverse effects on grizzly bears. Adverse effects that could result in impairment of breeding, feeding or sheltering would be infrequent and affect few bears. We conclude that this direction in the Revised Plan adequately conserves effective grizzly bear habitat and substantially reduces the risks of conflict between people and bears, and so promotes the recovery and survival of the CYE or SE grizzly bear populations.

- The desired condition under the Revised Plan is to provide large, remote areas with low levels of disturbance for grizzly bears and to ensure access management promotes recovery of grizzly bears (FW-DC-WL-02 through 05 and MA1a,b,c,e-DC-WL-01, MA3-DC-WL-01, MA5-DC-WL-01, GA-DC-WL-CDA-03, GA-DC-WL-LK-01 and 02, GA-DC-WL-PO-01, GA-DC-WL-PR-01 and 03, and GA-DC-WL-SJ-02). The Revised Plan reduces the area where roads or trails may be designated for wheeled motorized use in the recovery zones by 64,440 acres. These conditions complement the Access Amendment and could result in additional non-motorized areas beyond those required by the Access Amendment (S. Dekome 08/13/2013 pers.comm.). These same elements of the Revised Plan maintain habitat connectivity and linkage areas for movement of bears between U.S. and Canada and between U.S. recovery zones. The IPNF took into consideration connectivity issues when setting the individual BMU access management parameters (BA 2010a, p.50; Kaiser 2003 *In* USFWS 2011a, p. A-76).

- Timber harvest would be allowed on just 47 percent and 54 percent of the SE and CYE recovery zones in the action area, respectively. Additionally, the Access Amendment also indirectly limits the amount of grizzly bear habitat in BMUs (and subunits) affected by vegetation management activities that generate noise and other disturbance (e.g. timber harvest and recreation) by limiting the road access needed for these activities during the active bear year.

- The Revised Plan's desired condition for patches which includes a range of larger opening sizes may result in adverse effects if lack of cover leads to under use of foraging habitat or increased risk of human-grizzly bear conflicts causing mortality of a grizzly bear. Openings created by timber harvest, depending on site conditions, may retain features that interrupt the line of sight and provide cover for bears (J. Anderson 03/12/2013 pers. comm.). These measures could improve security and so promote foraging by bears in areas away from open motorized routes. Based on our history of consultation and proposed plan direction - specifically, road closures and restrictions directed by the Access Amendment - as well as public information and education programs that reduce the risk of human/bear conflicts, we anticipate that in most instances, the size of harvest units would not result in adverse effects on grizzly bears. Over the life of the Revised Plan, we anticipate that a few individual bears would be

adversely affected by opening size, but we expect these instances would be rare; that significant impairment of breeding feeding and sheltering infrequent; and that any such instances would undergo project-specific consultation. Thus, we conclude that opening size would have no substantial impacts on the grizzly bear populations in the CYE or SE.

- In BORZ, grizzly bears would have fewer options providing undisturbed areas to select from if disturbed by timber harvest and prescribed fire activities. However, we do not anticipate significant impairment of grizzly bears' ability to feed, breed, or shelter. This is attributed to the occupation of these areas by grizzly bears despite the sub-optimal conditions (including existing, ongoing levels of timber harvest), the elements of the Access Amendment that limit open, total, and temporary roads, and the Access Amendment requirement in BORZ to schedule timber harvest activities that will occur within multiple watersheds in a manner to minimize disturbance of grizzly bears resulting from road use during project level consultation (prescribed fire is often implemented as a post-harvest activity).

- Helicopter use associated with timber harvest would be designed using the *Guide to Effects Analysis of Helicopter Use in Grizzly Bear Habitat* (USFWS and USFS 2009) and is subject to project-specific consultation. Use of this guidance in planning activities would help avoid or reduce adverse effects on grizzly bears from helicopter use, including timber harvest. Based on our history of consultation on Forest management activities, we anticipate that helicopter use that may adversely affect grizzly bears would be relatively infrequent. Most projects would be designed to avoid or minimize adverse effects since the recovery zone is under MS1 designation where the needs of grizzly bears are favored when grizzly habitat and other land use values compete. Adverse effects on grizzly bears would likely occur only infrequently and many would be of short duration, and impairment of breeding, feeding and sheltering even more infrequent, and so these effects would not have substantial negative effects on the grizzly bear population.

- If future mines are proposed, the potential for adverse effects would be reduced or minimized through Revised Plan desired conditions FW-DC-WL-01 through 05; linkage guidelines FW-GDL-WL-15 through 17; food storage and attractant requirements (FW-STD-WL-03; Food Storage Order); and standards for access management (FW-STD-WL-02) as well as the development of appropriate mitigation plans where needed, as in the case of large scale operations such as the Troy Mine and Rock Creek Mine on the KNF.

- Under the Revised Plan, BORZ will continue to support grizzly bear movement and linkage on the whole, while causing some adverse effects on individual bears related to baseline conditions. However, we do not anticipate substantial negative effects on the population. This is because the allowable uses under the Revised Plan are already occurring in the BORZ and yet bears are meeting resources needs, albeit at lower densities than in the recovery zones. Additionally, the Revised Plan implements the

Access Amendment in BORZ which limits linear miles of open and total permanent roads to no more than the existing baseline conditions, which supports some use by grizzly bears, including females with cubs. Notably, the IPNF took into consideration connectivity issues when developing the BORZ polygons (USFS 2010a: Appendix F *In* USFWS 2011a, p. A-76). Lastly, the food storage order in BORZ will further facilitate connectivity between the SE and CYE by limiting risk of conflicts between grizzly bears and humans.

- The desired condition under the Revised Plans is that forest management contributes to wildlife movement within and between national forest parcels; movement between those parcels separated by other ownerships is facilitated by management of the NFS portions of linkage areas identified through interagency coordination; and federal ownership is consolidated at these approach areas to highway and road crossings to facilitate wildlife movement (FW-DC-WL-18). This would be achieved at the project or site-specific level through guidelines FW- GDL-WL-15 through 17.

Factors Related to the Grizzly Bear Populations

The current estimate for the CYE grizzly bear population is approximately 42 bears. The population trend for CYE grizzly bears is declining slightly (by less than one percent annually), but has improved since 2006. Since 2006, grizzly bear numbers in the CYE have been slowly, steadily increasing (Kasworm et al. 2012, p. 38, Figure 9). The rate of change in the population (lambda) has also improved and moved closer to stability (Kasworm 2013 unpublished data). These are indications that the CYE grizzly bears population status is improving.

The estimated population size in the SE is 83 grizzly bears Proctor et al. (2012, p.31), with 25-30 in the U.S. (W. Wakkinen 07/02/2013 pers. comm.). As previously discussed, it was estimated in 2004 that the population of grizzly bears in the SE was slowly increasing at a rate of 1.9 percent annually (Wakkinen and Kasworm 2004, p.72). There is no evidence to suggest that the growth rate has undergone major changes from the 2004 estimate (W. Wakkinen 07/02/2013 pers. comm.).

- In the CYE, one of the four 1993 demographic recovery criteria was met in 2012. The six-year running average for females with cub was 2.8, compared to the criteria of 6. The distribution criterion has not been met with only 13 of 22 BMUs occupied by females with young. Total human-caused mortality limits were not met in 2012, but had been met each year for the past four years (2008-2011) (Kasworm et. al 2012, p.18). The running 6-year average (2007-2012) of total human-caused mortality was 1.7 animals per year, compared to the sustainable limit of no more than 1.6 (ibid). Female mortality (0.5) meets the recovery goal of no more than 30% (0.5) of total mortality criteria. Due to the current small population size (estimated at 42), the mortality *goal* remains zero. Nonetheless, given the importance of female grizzly bears to the population, the current

6-year average level of human-caused female mortality is a positive sign for the status of this population.

- The population level estimate in the Cabinet Mountains was 21 bears in 2011. The estimate for 1998 was 15 bears or fewer. The augmentation effort appears to be the primary reason that grizzly bears are increasing in the Cabinet. The MFWP intends to continue the augmentation effort into the future with plans to relocate two grizzly bears for the coming season (depending on suitability of captured bears) (J. Williams 06/12/2013 pers. comm.).

- None of the 1993 demographic recovery criteria have been met in the SE (USFWS 2011a, p. A-115). Wakkinen (2009 pers. comm. as cited *In* USFWS2011a) noted: "that the ability to monitor the population has declined due to funding limitations and the reduction in trapping and radio collaring activities" in the recovery area. As described above, the USFWS has recently renewed efforts to monitor the SE population and data is forthcoming.

- BORZ associated with the CYE and SE on the IPNF have recurring use by grizzly bears, including females (USFWS 2011a, p. A-72). With implementation of the Access Amendment, which maintains baseline linear miles of open and total roads in BORZ, we expect these areas to continue to support grizzly.

Factors Related to the Conservation Needs of the SE and CYE Grizzly Bear Populations

Six conservation needs were identified for the SE and CYE grizzly bear population (Proctor et al. 2004, pp.155-157; Servheen 10/01/2006 pers. comm. as cited *In* USFWS 2011a, p. A-46):

1. Augment the Cabinet Mountains and Canadian Selkirks populations – Augmentation continues on the KNF portion of the CYE recovery zone;

2. Limit human-caused mortality - The IPNF implements extensive programs to limit the risk of human-caused grizzly bear mortality (Access Amendment; Food Storage and Sanitation Order; Ongoing Information and Education Programs; IGBC Guidelines - FW-GDL-WL-18; and food storage/sanitation requirements for special use permits - FW-STD-WL-03). There have been no grizzly bear mortalities attributed to improper attractant storage on the NFS lands in the CYE or SE. To date, there have been no grizzly bear deaths associated with food or attractants on NFS lands in the CYE or SE recovery zones nor has there been a grizzly bear/livestock conflict.

3. Enhance population linkage across Highways 2, 3, 200, 135, and 95 - The Revised Plan supports opportunities to install wildlife crossing structures and to maintain important habitat at crossing locations through desired condition FW-DC-WL-18 and guidelines FW-GDL-WL-15 through 17.

4. Address the needs of bears outside the recovery zone line - Through the Access Amendment, the IPNF and Service established BORZ areas. Within the boundaries of BORZ, the Access

Amendment limits linear miles of open and total permanent roads to the existing baseline condition; additionally, within BORZ, the Food Storage and Sanitation Order is applied; the Access Amendment r requires the USFS to schedule timber harvest activities that will occur within multiple watersheds in a manner to minimize disturbance of grizzly bears resulting from road use during project level consultation; and the IPNF took into consideration connectivity issues when developing the BORZ polygons (USFS 2010a: Appendix F *In* USFWS 2011b, p. A-76).

5. Inside the recovery zone, a) complete access management in most important areas - The IPNF currently implements the Access Amendment (USFS 2011c) and b) improve sanitation standards on public lands – the IPNF implemented a Food Storage and Sanitation Order in 2011; the Revised Plan implements sanitation measures in permits and plans of operation (FW-STD-WL-03).

6. Increase outreach and public involvement - Existing public outreach and education programs will continue through IPNF's role in the Selkirk/Cabinet-Yaak Subcommittee of the IGBC.

In summary, the proposed action conserves and increases the amount of grizzly bear habitat in conditions that support female grizzly bears and reproduction on IPNF lands in recovery zone. Forest Plan access management and the food storage order would support continued use of habitat by bears in BORZ. Forest-wide, access management and the food storage order reduce the potential for conflicts between grizzly bears as a result of excessive road access and food and attractant storage, which in turn reduces human-caused mortality risk to grizzly bears. Finally the Revised Plan adequately minimizes the impacts of adverse effects of Forest management on grizzly bears. We conclude that the Revised Forest Plan would not appreciably diminish, but would increase the likelihood of recovery of both the CYE and SE grizzly bear populations. Therefore, the proposed action is not likely to jeopardize grizzly bears.

G. INCIDENTAL TAKE STATEMENT

Section 9 of the Act, and Federal regulations pursuant to section 4(d) of the Act, prohibit the take of endangered and threatened species, respectively without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission that creates the likelihood of injury to listed wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with this Incidental Take Statement.

The measures in an incidental take statement are non-discretionary and must be undertaken by the action agency so that they become binding conditions of any grant or permit issued, as appropriate, for the exemption in section 7(o)(2) to apply. The action agency has a continuing duty to regulate the activity that is covered by this incidental take statement. If the action agency (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the action agency must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR 402.14(i)(3)].

1. Amount or Extent of Take Anticipated in the Action Area

This biological opinion considered the effects to grizzly bears from implementation of the Revised Plan direction as guided by the Revised Plan elements (goals, objectives, desired condition, standards, and guidelines). It includes specific elements for the conservation of grizzly bears and grizzly bear habitat, but does not authorize specific actions.

This biological opinion does not provide an analysis for effects of specific actions. Rather, our analysis is a broad-scale examination of the types of projects and activities conducted under the Revised Plan that could potentially occur in grizzly bear habitat and result in effects on grizzly bears. The Revised Plan contained sufficient specificity through its suite of elements to permit an adequate analysis of the effects of types of projects and activities on grizzly bears and to make a determination that the extent of adverse effects on grizzly bear as a result of the Revised Plan does not rise to levels that are likely to jeopardize grizzly bears.

In this biological opinion, we documented how the Proposed Action reduces the potential for adverse effects and incidental take to occur as a result of Forest management. However, the potential remains for specific projects and activities to result in adverse effects and incidental take of grizzly bears. The mere potential for future take from these actions is not a legitimate basis for providing an exemption for take. The IPNF is responsible for section 7 consultation on all future projects (conducted under the Revised Plan) that may affect the grizzly bear or its habitat, even if those projects are consistent with Revised Plan. Subsequent consultation, as appropriate, on the specific actions developed pursuant to the Revised Plan will serve as the basis for enumerating the incidental take and 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).

Two exceptions to this approach are related to the effects of motorized access route densities and over-snow motorized use on grizzly bears. For motorized route densities, the science is clear that above certain average road densities, bears may suffer adverse effects that can lead to significant impairment of the ability to feed, breed, or shelter. Further the Forest carefully examined, monitored and reported motorized access route densities in each BMU, set access standards for each BMU and provided a timeframe for achieving BMU access standards. In the BORZ, the Forest examined, monitored and reported linear motorized road miles and adopted a

prohibition on increasing the existing road miles. Hence, we are able to ascertain the level of adverse effects and provide surrogate measures of incidental take of grizzly bears related to road densities and that analysis, previously conducted in our consultation on the 2011 Access Amendment, was brought forward in this document.

For over-snow motorized use (i.e. snowmobile use) the Forest examined, monitored and reported the amount of denning habitat that was impacted by late season snowmobile use. The best available science and information suggests that recently emerged females with cubs would be vulnerable to adverse disturbance effects of snowmobile use near densities during late spring. The Forest provided both acres of denning habitat and an estimate of late season snowmobile use in denning habitat. Thus, we are able to ascertain the level of adverse effects and provide surrogate measures of incidental take of grizzly bears related to late-season snowmobile use. These two types of incidental take are examined below.

Finally, although it is not Revised Plan direction, a food storage order is in effect for the IPNF (USFS 2013a, Appendix F). Additionally, contracts and permits in the action area include food storage requirements under the Revised Plan. Lastly, there has been a concerted effort to address sanitation on NFS lands throughout the action area and CYE and SE as a whole, with many campgrounds and developed recreation sites now having bear-resistant garbage and/or food storage container. Additionally, dispersed recreationists are informed of the food storage order through trail-head signs and pamphlets at visitor centers and developed recreation sites. For reasons detailed in the biological opinion, we anticipate no incidental take as a result of habituation and food conditioning of grizzly bears related to improper food or attractant storage on the IPNF over the life of the Revised Plan and so no take is exempted. Further, for reasons detailed in this biological opinion, we do not anticipate incidental take of grizzly bears as a result of habituation and food conditioning as a result of grazing under the Revised Plan, and so no take is exempted.

Access Management –The Service analyzed the amount or extent of incidental take of grizzly bears anticipated as a result of the Access Amendment on the IPNF in our 2011 biological opinion and incidental take statement (USFWS 2011a). As detailed in the IPNF's Draft EIS for the Revised Plan (USFS 2011b), the associated BA (USFS 2013a) and this biological opinion, the Revised Plan incorporates the Access Amendment in its entirety and would result in no additional adverse effects on grizzly bears related to motorized access management.

The proposed Revised Plan will establish grizzly bear habitat management standards for all 22 BMUs in the CYE. Within the action area, the proposed standards for 20 of 22 BMUs in the CYE will meet or exceed (be better than) the benchmarks for core area; 15 of 22 in the CYE will meet or be better than the benchmark for OMRD; and 16 of 22 in the CYE will meet or be better than the benchmark for TMRD that research suggests provide conditions necessary to support the home range use and habitat needs of an average adult female grizzly bear (Table A8, page A-68 *In* USFWS 2011b). The grizzly bear access management benchmarks identified through research specific to these ecosystems are as follows: home ranges were comprised of 1) an average 55 percent core area; 2) an average of 26 percent TMRD greater than 2 miles per square mile; and 3) and average of 33 percent OMRD greater than 1 mile per square mile.

As described in the accompanying biological opinion, the effect of roads upon grizzly bear behavior and habitat use has been well documented in the scientific literature. We anticipate that incidental take of grizzly bears is likely to occur in the form of harassment of adult female grizzly bears in highly roaded areas (through displacement caused by road-related disturbance in areas of high open road densities). We also anticipate harm of adult female bears (through significant habitat modification or degradation caused by high open or total road densities). Both harassment and harm cause actual injury to female grizzly bears by significantly disrupting normal behavioral patterns, including breeding, feeding, or sheltering.

The take we anticipate would be caused by displacement (i.e. significant underuse) of female grizzly bears from key habitat areas in highly roaded areas, which may result in decreased fitness that impairs a female's inherent reproductive potential. In other words, some adult female grizzly bears wary of humans and human-generated disturbance may fail to breed at their potential frequency or they would fail to complete gestation due to decreased fitness. We do not expect all adult female grizzly bears affected by displacement or by alteration of habitat caused by the proposed action to suffer impairment of breeding, feeding and/or sheltering. We do not anticipate incidental take of male and subadult grizzly bears, which are independent and thus more mobile and do not have the physiological or nutritional requirements of pregnant or lactating females.

Currently, the Service is unaware of scientific or commercial information that could be used to quantify the exact level of incidental take of female grizzly bears as a result of such impacts to or degradation of their habitat, disturbance, or displacement. Reduced reproductive success of females as a result of displacement effects could include grizzly bear cub injury or mortality, but it is more likely to occur through failure to breed or complete gestation. The amount of take is difficult to quantify for the following reasons:

1. The amount of take would depend on the number of adult female grizzly bears impacted by high road densities. We lack specific information on the precise number of adult female grizzly bears that use the action area, but due to the amount of habitat meeting acceptable habitat parameters, we reasonably assume very few adult females would be affected.
2. Individual grizzly bears would react differently to the disturbance. Not all adult female bears that are exposed to disturbances from roaded areas would be adversely impacted to the point of take.
3. Individual female grizzly bears that initially may be sensitive to disturbances may over time become accustomed to the routine disturbances generated by routine forest road use. Therefore, determining the precise amount of take, as defined by impaired reproductive potential, is difficult.

Therefore, as detailed in this biological opinion, the Service anticipates some low level of incidental take of female grizzly bears would occur in the form harm or harassment from the displacement effects of road densities.

The amount of take would be also difficult to detect for the following reasons:

1. Grizzly bears are not easily detected or observed in the wild.
2. Reproductive rates of individual female grizzly bears vary naturally due to environmental and physiological causes.
3. A reduction in "normal" reproductive success of an individual female is not easily discernible in the wild.
4. The reasons a grizzly bear fails to breed and/or failure to complete gestation are not discernible in the wild.

In instances where incidental take is difficult to quantify or detect, the Service uses surrogate measures of take. Here, we use the research benchmark levels of OMRD, TMRD, and security core as our surrogate measure of incidental take. These benchmarks were discussed in detail in this biological opinion. Where individual BMU road densities are higher than benchmark levels of OMRD or TMRD, or where core is less, we conservatively anticipate some level of impaired habitat use, resulting in impaired breeding or feeding for some adult female grizzly bears.

Based on the best available research and information, we anticipate that some level of incidental take of female grizzly bears will occur within individual BMUs as long as: 1) OMRD exceeds one mile per square mile in more than 33 percent of a BMU; 2) TMRD exceeds two miles per square mile in more than 26 percent of a BMU, and/or 3) core area makes up less than 55 percent of a BMU. Within those BMUs achieving the research benchmarks, incidental take of grizzly bears is unlikely to occur. Through 2019, IPNF actions will reduce motorized route densities to achieve Revised Plan standards in each BMU. Four of 6 in the CYE and 7 of 8 in the SE of the proposed BMU standards meet research benchmarks. Until these benchmarks are met, we anticipate some level of incidental take of female grizzly bears in these BMUs, and that the likelihood and level of take will diminish over the following years as BMUs attain the benchmark levels for access management.

In 3 of the 14 BMUs on the IPNF in both the CYE and SE, one or more of the Revised Plan's standards do not meet all three of the research benchmarks. In these BMUS, we anticipate incidental take of female grizzly bears is likely to occur, and that the level and likelihood of take will diminish as open and/or total road densities are lowered, and/or core area increases nearer to benchmark levels. However, the likelihood of incidental take would not be entirely eliminated in these BMUs. We anticipate a low level of take for 1 of the 3 BMUs on the IPNF that have standards near the research benchmark for OMRD and TMRD (Table A8, p.A-68 *In* USFWS 2011a), because this BMU will eventually provide 55 percent core area or more (Table A8, p.A-68 *In* USFWS 2011a), and because of the three reasons listed above related to quantification of take.

Two BMUs on the IPNF (Grouse in the CYE and Lakeshore in the SE) may never be capable of providing the conditions that research has indicated needed to support an average female home range. Therefore, for these BMUs, the proposed action establishes grizzly bear habitat management standards at levels that may not be capable of providing the full suite of home range

needs of the average adult female grizzly bear. Thus, female grizzly bears with home range use in this area may significantly avoid key habitat in these BMUs, and so incidental take in the form of harm may be a persistent long-term condition.

Using this surrogate measure of incidental take, by the end of 2019, all BMUs shall meet the Revised Plan (Access Amendment) standards (shown in blue in Table II-10 above), or the amount of take we anticipated and analyzed here would be exceeded, and reinitiation of consultation would be required.

In the BORZ (areas outside the recovery zones within the action area), we anticipate some level of incidental take of female grizzly bears. We base our opinion on the facts that: 1) linear miles of road are relatively high in these areas; and 2) the IPNF has not specifically managed for grizzly bear habitat relative to road standards outside of the recovery zones. Thus, given these facts, in conjunction with the cited research pertaining to the effects of roads on grizzly bear behavior and habitat use, we anticipate that linear miles of road are likely causing incidental take of grizzly bears and this will continue. This is a conservative conclusion. Since grizzly bears moving into these areas did so under prevailing conditions, it is also possible that incidental take is not occurring for every female. Grizzly bears are known to tolerate a range of conditions; some apparently adjust to high levels of human activity without apparent consequence. Further, because few grizzly bears occupy this area, intraspecific competition is probably not significant. Those grizzly bears using the BORZ likely have options related to home range selection and use. Similar to the incidental take likely occurring within BMUs, we anticipate a low level of incidental take of female grizzly bears in the BORZ in the form of harassment, and /or harm through significant habitat modification or degradation as a result of high road densities and associated disturbance, which causes actual injury to grizzly bears by significantly disrupting normal behavioral patterns, to the extent that a female's normal reproductive potential is impaired.

In the BORZ, we use the surrogate measure of the linear miles of road in each BORZ polygon as of 2010. In the BORZ, permanent increases in linear miles of open road and/or permanent increases in linear miles of total road beyond the standards shown in Table II-11 of this biological opinion will result in levels of take that exceed the amount of incidental take we anticipate here, and reinitiation of consultation would be required.

Through 2019, the IPNF may conduct a one-time entry (i.e., one season of construction activity) of core within a BMU, for the sole purpose of completing needed road decommissioning and stabilization activities on existing closed or barriered roads in core area (i.e., legacy roads that were closed to create core before this issue was identified), that shall occur during one bear season. Such management is in the interest of creating long term secure habitat for bears and in protecting aquatic habitats for bull trout and other species. Roads that are closed in the future will be hydrologically stabilized so as not to need such maintenance. Motorized use of such previously closed roads in core may in some cases result in incidental take of female grizzly bears in the form of harassment (displacement) or harm (significant habitat modification or degradation), which causes actual injury to grizzly bears by significantly disrupting normal behavioral patterns to levels that impair reproduction. Adult female grizzly bears that have

established habitat use patterns within a core area may experience significant displacement from an area if a road(s) were entered for decommissioning. We anticipate a low level of take, as we do not expect take would occur if entries were limited in duration and actions taken were of relatively low impact. Further, not all females impacted by such entries and actions in core would suffer significant displacement.

For reasons stated above, this take is difficult to quantify. Here, we use the following surrogate measures to quantify and measure incidental take of female grizzly bears related to such entries into core: If more than one entry of core occurs prior to the end of 2019 within any block of core, or occurs for more than one bear season, or occurs for reasons other than completing road decommissioning/stabilization activities on existing closed or barriered roads in core area habitat (see Part I.B.2.a *In* USFWS 2011a, p. A-13), the level of incidental take anticipated here would be exceeded and reinitiation of consultation would be required.

Similarly, after all BMUs have reached standards (i.e. 2019), adverse effects on grizzly bears may occur over the short-term through any permanent loss of core area from existing conditions within any individual BMU currently exceeding (being better than) the research benchmarks. Adult female grizzly bears that have established habitat use patterns within a core area may experience significant displacement from an area if a road(s) were built or upgraded, and used. The Revised Plan (with incorporation of the Access Amendment), in and of itself, does not permit permanent reductions in core area; but rather establishes some BMU core standards at levels less than the existing condition. The IPNF commits to no permanent reductions in core area in such BMUs until all the BMUs within their jurisdiction in the respective recovery zones are up to standard. Once all BMUs achieve standards, grizzly bear habitat across multiple BMUs, as well as within, will be more conducive to supporting female home ranges across the landscape. Adult females impacted by new roads in core would likely have options within their home range to find alternate suitable habitat over time, and adjust habitat use patterns accordingly. These projects would occur in the future, where the environmental baseline, status of the species, and cumulative effects may be substantially different than now. Further, each project would have specific design elements related to scale and timing. Thus, we lack information needed to enumerate the amount of take associated with these actions. As explained earlier, these projects would undergo independent section 7 consultation (as appropriate) and will be analyzed given the prevailing conditions and information at the time, including grizzly bear population and habitat indices. *Thus, any incidental take that may result from future permanent reductions of core area to standards <u>is not</u> exempted here.*

Over-snow Motorized Use – In the CYE and SE, incidental take in the form of harm may occur where late season snowmobiling overlaps with grizzly bear post-denning habitat. The incidental take is expected to be in the form of harassment to individual female grizzly bears and/or cubs caused by premature den emergence or premature displacement from the den site area, resulting in reduced fitness of females and cubs. We expect the amount and extent of take would be very low. Late season snowmobile use would affect very few individual females with cubs over the life of the plan, as adult females with cubs occur at very low numbers compared to the amount of denning habitat available. As spring season ends, the amount of snowmobile use decreases. Finally, an individual female would not likely be affected for more than one denning season.

Grizzly bears typically do not reuse den sites. Thus, if a female grizzly bear suffers significant disturbance at or near her den site, it is probable that she would locate a new site to den in the future and would have options for denning elsewhere.

In the CYE, female grizzly bears with cubs emerge around the third week of April. By May 31, we conservatively anticipate conditions would no longer be conducive to snowmobile use. Therefore, in the CYE, we conservatively anticipate some level of incidental take on 14,250 acres between April 15 and May 31 where snowmobile use currently occurs in denning habitat.

In the SE we expect female grizzly bears with cubs to also emerge around the third week of April. By May 31, we conservatively anticipate conditions would no longer be conducive to snowmobile use. In the SE, we conservatively anticipate some level of incidental take on 7,440 acres of denning habitat between April 15 and May 31 where snowmobile use currently occurs in denning habitat.

Thus in this case, we use the acres of denning habitat that overlap with areas currently receiving snowmobile use as our surrogate measure of incidental take. The surrogate measure of take is the amount of potential denning habitat currently used by snowmobiling. In the CYE recovery zone: 14,250 acres; in the SE: 7,440 acres. If the IPNF detects chronic late season use on more than this amount of denning habitat in either recovery zone, then the amount of take we anticipated in this biological opinion would be exceeded.

2. Effects of Take

Effects of Take in the CYE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the grizzly bear. The best information indicates the overall status of the Cabinet-Yaak grizzly bear population is probably decreasing, by about -0.8 percent per year. However population trend has improved; since 2006 the numbers of bears have increased and population is now is nearing stability. The rate of increase in the population has also improved. As detailed in this biological opinion, the proposed action may cause localized and short- or long-term adverse effects, but would result in overall ecosystem-wide improvements.

Notably, the Forest Plan incorporates the 2011 Access Amendment, which would reduce the amount of incidental take related to high motorized route densities. Motorized access densities in BMUs would be reduced, and core area would increase, to standards in the plan, reducing the amount of take related to motorized access management. Most BMU standards require access levels that research indicates would support an average female home range and reproduction. Core area across the recovery zone would increase to 58.5 percent. The Revised Plan would preclude permanent increases in either open or total linear miles of permanent road in the BORZ areas outside of the recovery zones, which would not increase the existing amount of take related to motorized access in these areas. Grizzly bear use of BORZ has been documented.

As also detailed in this biological opinion, the Revised Plan includes a suite of Desired Conditions (FW-DC-WL-02 through 05 and MA1a,b,c,e-DC-WL-01, MA3-DC-WL-01, MA5-

DC-WL-01, GA-DC-WL-LK-02, and GA-DC-WL-PO-01,) that describe a forest trend toward large, remote areas with low levels of human disturbance and thereby complement the requirements of the Access Amendment.

Revised Plan direction reduces the incidental take of grizzly bears related to motorized access to a low amount in the recovery zone, and limits the amount in the BORZ. Thus, this amount of incidental take is unlikely to result in substantial negative impacts on the CYE population. The net effect of the access management direction supports survival and recovery of the population by supporting the numbers, distribution and reproduction of grizzly bears, including females, across the ecosystem.

The biological opinion determined that some low amount (low number, and short-term impact) of incidental take is anticipated where late season snowmobiling currently overlaps with denning habitat. We determined that the anticipated amount of incidental take is limited to the disturbance of a low number of females with cubs, during a short period of snowmobile use in a small portion of available denning habitat. This level of take is unlikely to result in substantial negative impacts on the CYE population. The net effect of Plan direction would not increase the level of this take, and may decrease it in the future. Thus, the take would not substantially negatively impact the survival and recovery of the population reducing the numbers, distribution and reproduction of grizzly bears across the ecosystem.

Finally, the opinion determined that a low amount of incidental take associated with helicopter harvest, large opening sizes, mining proposals, or special use authorizations could occur. This take would be infrequent and affect few individuals. Forest Plan direction would be unlikely to increase the level of this take, and elements of the Plan would avoid, reduce, or minimize the impact of any take. Thus, the take would not substantially negatively impact the survival and recovery of the population reducing the numbers, distribution and reproduction of grizzly bears, including females, across the ecosystem.

Effects of Take in the SE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the grizzly bear. The best information indicates the Selkirk grizzly bear population estimate 83 grizzly bears, with 25-30 in the U.S. (W. Wakkinen 07/02/2013 pers. comm.), which is based on expert opinion. As previously discussed, it was estimated in 2004 that the population of grizzly bears in the SE was slowly increasing at a rate of 1.9 percent annually (Wakkinen and Kasworm 2004, p.72). Recently, Wakkinen indicated that there is no evidence that would suggest any major changes from the 2004 population growth rate; however, this will be updated in upcoming years (W. Wakkinen 07/02/2013 pers. comm.).

Notably, the Forest Plan incorporates the 2011 Access Amendment, which would reduce the amount of incidental take related to high motorized route densities. Motorized access densities in BMUs would be reduced, and core area would increase, to standards in the plan, reducing the amount of take related to motorized access management. Most BMU standards require access levels that research indicates would support an average female home range and reproduction. Core area across the IPNF portion of the recovery zone would increase to 61.4 percent. The

Revised Plan would preclude permanent increases in either open or total linear miles of permanent road in the BORZ areas outside of the recovery zones, which would not increase the existing amount of take related to motorized access in these areas. Grizzly bear use of BORZ has been documented.

As also detailed in this biological opinion, the Revised Plan includes a suite of Desired Conditions (FW-DC-WL-02 through 05 and MA1a,b,c,e-DC-WL-01, MA3-DC-WL-01, MA5-DC-WL-01, GA-DC-WL-LK-01 and 02, GA-DC-WL-PR-01 and 03,) that describe a forest trend toward large, remote areas with low levels of human disturbance and thereby complement the requirements of the Access Amendment.

Revised Plan direction reduces the incidental take of grizzly bears related to motorized access to a low amount in the recovery zone, and limits the amount in the BORZ. Thus, this amount of incidental take is unlikely to result in substantial negative impacts on the SE population. The net effect of the access management direction supports survival and recovery of the population by supporting the numbers, distribution and reproduction of grizzly bears, including females, across the ecosystem.

The biological opinion determined that some low amount (low number, and short-term impact) of incidental take is anticipated where late season snowmobiling currently overlaps with denning habitat. We determined that the anticipated amount of incidental take is limited to the disturbance of a low number of females with cubs, during a short period of snowmobile use in a small portion of available denning habitat. This level of take is unlikely to result in substantial negative impacts on the SE population. The net effect of Plan direction would not increase the level of this take, and may decrease it in the future. Thus, the take would not substantially negatively impact the survival and recovery of the population reducing the numbers, distribution and reproduction of grizzly bears across the ecosystem.

Finally, the opinion determined that a low amount of incidental take associated with helicopter harvest, large opening sizes, mining proposals, or special use authorizations could occur. This take would be infrequent and affect few individuals. Forest Plan direction would be unlikely to increase the level of this take, and elements of the Plan would avoid, reduce, or minimize the impact of any take. Thus, the take would not substantially negatively impact the survival and recovery of the population reducing the numbers, distribution and reproduction of grizzly bears, including females, across the ecosystem.

3. Reasonable and Prudent Measures

Biological opinions typically provide reasonable and prudent measures that are expected to reduce the amount of incidental take. Reasonable and prudent measures are those measures necessary and appropriate to minimize incidental take resulting from a proposed action. Reasonable and prudent measures are nondiscretionary and must be implemented by the agency in order for the exemption in section 7(o)(2) to apply.

The Service concludes that the Forest has incorporated all practical measures possible into the proposed action to minimize the impacts of take on grizzly bears. For that reason, the Service has not identified any Reasonable and Prudent Measures necessary to further minimize the

impacts of such take on the grizzly bears. However, the Service has identified mandatory reporting and monitoring requirements below as Terms and Conditions that must be complied with in order for the take exemption in this Incidental Take Statement to be valid.

It is critical to understand that the conclusion of this opinion is based on those features being implemented as part of the proposed action; if they are not implemented, our analysis may not remain valid and this opinion may be subject to reinitiation (50 CFR 402.16(3)).

4. Terms and Conditions and Reporting Requirements

The Forest shall conduct monitoring and reporting of incidental take as follows:

1) By April 15 each year, the IPNF shall submit an annual report to the Service that details the progress made toward achieving and maintaining the standards for percent Core Area, OMRD, and TMRD within the Recovery Zones.
2) The annual report shall provide an ongoing list detailing the locations, dates, duration, and circumstances for invoking the Access Amendment allowance for entering core area for the purposes of road decommissioning or stabilizations.
3) The IPNFs shall coordinate with State and Federal agency biologists to collect credible grizzly bear observations that occur outside of the Recovery Zone boundaries and add this information to the 6th-order HUC database for inclusion into the annual report.
4) During the first year of implementation of the Revised Forest Plan, the Forest and the Service shall cooperatively develop a plan to monitor the scope and magnitude of late-season snowmobiling (post April 15) as it relates to effects on post-den emergent grizzly bears (see Incidental Take Statement). Within five years of implementation of the Revised Forest Plan, the Forests shall complete a winter travel plan, which will include considerations for grizzly bear and other federally listed species.
5) The Forest shall notify the Service's North Idaho Field Office or Grizzly Bear Recovery Coordinator within 24 hours of any bear-human conflicts that occur on the Forest, regardless of cause or season.

H. 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 provides the following conservation recommendations for the grizzly bear:

1. Continue to install grizzly bear information signs at major access points advising the public of grizzly bear presence, proper sanitation/food storage techniques, and providing information on distinguishing characteristics between grizzly bears and black bears.
2. The Forest develops, in coordination with the Service and the IGBC, a strategy addressing point source disturbances (e.g., helicopter logging, mining, etc.).

3. The Forest works cooperatively with the Service to identify linkage areas that may be important in providing landscape connectivity within and between geographic areas, across all land ownerships for grizzly bears and Canada lynx.
4. Within linkage areas, the Forest provides 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. The Forest plans recreational development, and manages recreational and operational uses to provide for grizzly bear, Canada lynx, and mountain caribou movement, and to maintain effectiveness of grizzly bear, Canada lynx, and mountain caribou habitat.
6. The Forest identifies and prioritizes roads for reclamation or seasonal restrictions within watersheds with relatively high road densities so as to improve habitat quality and/or security for grizzly bears, Canada lynx, mountain caribou, and bull trout, as well as other listed and non-listed fish and wildlife species.

I. REINITIATION NOTICE

This concludes formal consultation on the KNF Revised Plan and its effects on grizzly bears and grizzly bear habitat. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been maintained (or is authorized by law) if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species in a manner or to an extent not considered in this opinion; (3) the proposed action is subsequently modified in a manner that causes an effect to the listed species that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

Thus, reinitiation is required if, at any time during the course of the action, the level of take occurring exceeds that anticipated in this incidental take statement:

- The BMUs on the IPNF in the SE recovery zone exceed the standards contained in Table II-10 of this biological opinion.
- The BMUs on the IPNF in the CYE recovery zone exceeds the standards contained in Table II-10 of this biological opinion.
- The BORZ exceed the permanent linear miles of open road and/or permanent linear miles of total road depicted in Table II-11 of this biological opinion.
- 14,250 acres of potential denning habitat that overlap with areas currently receiving snowmobile use on IPNF lands in the CYE recovery zone.
- 7,440 acres of potential denning habitat that overlap with areas currently receiving snowmobile use in the SE recovery zone.

Such incidental take requires reinitiation of consultation and review of the incidental take statement. In instances where the amount or extent of incidental take is exceeded any operations causing such must cease pending reinitation.

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